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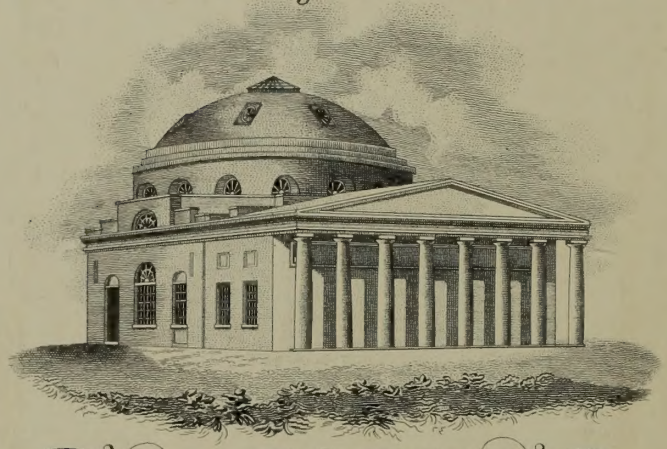

University of Maryland

University of Maryland Theses

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[1] Thesis says "Steward", other sources say "Stewart".

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UNIVERSITY OF MARYLAND

THESES

1878 (a)

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(1) Noteworthy calligraphy on title page

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1878

Thesis

by

B. F. Philips

Subject Scarlatina

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Scarlatina

Definition. — Scarlatina is an eruptive disease characterized by redness of skin and local lesions situated in the throat, it is remarkable for the wide diversity which it presents in different cases, as it regards symptoms and fatality, in some forms it is a trivial disorder and in others exceedingly malignant.

Varieties. Three forms are generally recognized, Scarlatina Simplex, Scarlatina Anginosa, and Scarlatina Maligna. Widely different are these forms as it regards gravity and fatality.

Morbid Anatomy. — The eruption is

the skin and the lesions in the throat constitute the anatomical characters in this disease, other morbid appearances found after death are due to some concomitant affection or complication.

Clinical History. — There are three stages recognized during the term Scarlatina is running its course.

Stage of invasion. — The attack may or may not commence with a chill, nausea and vomiting, sometimes diarrhoea, pains in head and loins and general malaise, as a rule the febrile movements are notably higher than any of the other exanthe

disease of stasis is not uncommon. redness of the fauces may generally be observed with pain in the act of swallowing, pain & the efflorescence upon the skin, in any mild cases the symptoms may be so light that the patient does not take to the bed; the duration of this stage upon an average is about twenty four hours, but sometimes the eruption occurs a few hours after the attack, and again it may be delayed for three or four days after the usual time of its appearance, a long delay in its appearance is frequently due to some complications,

Stage of eruption. — This stage in children is often ushered in by transient convulsions which at that period is not due to uremic poison. The eruption almost always appears on the body and after extremities before invading the face and neck but in a certain proportion of cases it appears on the face and neck first. It is usually diffused extending over the body in twenty four hours, it first appears in small dots or specks, these coalesce forming irregular patches with serrated margins, the redness is most vivid and remains longest in situations where the

skin is quite delicate, the redness momentarily disappears upon pressure and if anything based be done angry the patch is white about will remain for a short while, the scarlet color is not uniform like erysipelatous efflorescence, but upon close inspection the patches show small points which are of a more deeply red color. generally upon passing the finger over the patches they are felt to be smooth, but sometimes there is a sensation of minute elevations these are the papillae abnormally developed as in a commonly known as the goose skin, the eruption is sometimes

attended with burning and pruritis. it reaches its maximum of intensity and diffusion on the third day after its appearance, there is a great variation in the amount of cutaneous eruption, it is often so slight when the throat begins as to scarcely attract as in scarlatina anginosa the eruption then seems to be concentrated within the throat, sometimes the efflorescence disappears and returns again after an short interval, but such cases are rare, the scarlet color is more vivid towards the evening than in the morning, the throat is more or less affected in

the majority of cases, but in very mild cases throat lesions are sometimes wanting, if the throat be only slightly affected there is simply redness over the tonsils, posterior pharynx and soft palate, but in the majority of cases, there is swelling of the tonsils with a white or red colored exudation, the false membrane does not adhere tightly and cannot be detached in strips as in diphtheria, the exudation may become dark colored from matters vomited or by the oozing of blood, the submaxillary and lymphatic glands at the angle of the jaw often become

affected, the tongue early in the disease becomes coated and papillae projects, during the disease the coating is exfoliated leaving the tongue clean and reddened, and presents a strawberry appearance which is pathognomonic of scarlatina, the febrile movements as a rule increase after the appearance of the eruption, the pulse is more rapid and the temperature is higher during scarlatina than in any of the other essential fevers, delirium of an incoherent type generally exists save in very mild cases it is therefore always needed to keep the patient under observation.

albuminuria is sometimes present during the stage of eruption.

Stage of desquamation. — The commencement of desquamation marks the beginning of this stage. The exfoliating process takes place in a gradual manner and the gravity of the symptoms abate accordingly. Defervescence may supervene rapidly but generally more gradually. Exfoliation takes place in the form of scales or in pieces of epidermis. Occasionally the entire of the hands and feet are detached and may be stripped off like a glove. If there be no complications convalescence usually takes place during this stage.

a recurrence of the eruption occasionally supervenes. albuminuria appears often during the third stage. Had at any other period of the disease, it is not always indicative of important renal disorder but often lesions of the kidneys exist. The duration of this stage is not limited. it may terminate in a few days, or continue several weeks, in the malignant form of scarlatina the symptoms are extremely grave from the beginning, the pulse becomes highly accelerated, sometimes being one hundred and forty and sometimes one hundred and sixty per minute. the temperature becomes greatly elevated and ataxic lesions of the

pernicious nature, inflammation death some-
times taking place in a few hours, and may
occur before the eruption on the skin or
any pharyngeal soreness is apparent, con-
vulsions, delirium, and coma are often
produced by uraemic poison; in Scar-
-latina Angenosa the cutaneous erup-
tion is apt to be slight and the af-
-fection of the throat severe, albumin-
-uria exists most frequent in this
form of Scarlatina.

Complications and Sequelae. - Albumi-
-nuria, dropsy, laryngitis, oedema of
the glottis, inflammation of the eusta-
-chian tube, pneumonia, diphtheria,
articular rheumatism, and vaginitis,

Causation. — Scarlatina is propagated by infection and contagion. It occurs most frequently in children during the third and fourth year of life and seldom attacks persons over the age of forty; as a rule it occurs but once, but may return the second and third time.

Diagnosis. — The short duration of the stage of invasion, the intensity of the febrile movement, the appearance of the efflorescence in the throat prior to the cutaneous eruption, the appearance of the eruption on the body and upper extremities before, or, simultaneously with that-

of the face and neck, the rapid diffusion and scarlet color of the rash, the serrated margin of the patches and the persistence of them after the appearance of the eruption.

Differential Diagnosis of Scarlatina and Smallpox. — In Scarlatina the fauces are attacked early in the disease, in smallpox they are not. In Scarlatina there is no marked lumbar pains, in smallpox they are extremely severe, vomiting almost always present in Scarlatina, and often the second stage is ushered in by a convulsion, during smallpox vomiting is not necessarily present,

In scarlatina the eruption generally appears on the second day, in small pox on the third day, in scarlatina the rash invades the trunk and upper extremities first, in small pox the face and neck. In scarlatina the febrile lesions are increased during the second stage, in small pox they are when the eruption appears.

Differential Diagnosis of scarlatina and rubeola. In rubeola we have marked coryza and bronchitis as complained of red, watery and inflamed eyes, not so in scarlatina, in rubeola the rash appears on the fourth day, in scarlatina on the second

days, in rubeola the rash first appears on the temple and forehead and is soon diffused over the body, nor is there any specific throat affection.

Prognosis. — The prognosis in cases of scarlatina is favorable, in others extremely grave, complications particularly laryngitis, diphtheria, suppuration of the glands of the neck and uraemic convulsions indicate imminent danger

Treatment of Scarlatina. In the treatment of Scarlatina the expectant plan is to be pursued, in mild cases good hygienic treatment may only be required such as proper ventilation, cooling drinks, good food, and diaphoretics to promote the function of the skin, thereby lessen the tendency to renal disorder, as much as possible, sponging the skin with tepid water and rubbing dry afterward is sometimes advantageous, as is also the warm bath or wet sheet. Nervous irritability should be allayed by anodynes, and constipation removed by enema or mild cathartics, for throat lesions chlorate potass gargle

internally and used as a gargle is very efficacious, in malignant Ca[illegible] [illegible] the vital forces must be sup[illegible] by Stimulants, such as wine whey, Milk [illegible] &c; when administering alcoholic Stimulants always watch the effect and if they are not acting [illegible] withdraw them for a time and try them again after a short period has expired. counter irritation on the neck may be resorted to by the use of tincture of Iodine, mustard washes should be applied to the throat such as Tannin, Boracic Acid, Chlorate Potassa, or Alum. When uremic symptoms appear [illegible] diaphoretics must be given in order

to assist the Kidneys in the process of eliminating urea from the blood, uraemic convulsions are sometimes checked by the administration of Belladonna, Hyoscyamus, or Opium. Belladonna may be administered as a prophylactic, but its efficacy is uncertain.

R. F. Phillips

A Thesis,

on the

Fifth Pair of Cranial Nerves,

Respectfully Submitted to the

Provost, Regents and Faculty

of the Medical School of the

University of Maryland,

for Examination, on

Applying for the Degree of

Doctor of Medicine,

by

Edwin Bouldin Fenby, of

Westminster, Md.

February, 1878.

The Fifth Pair of Cranial Nerves.

Introductory Remarks.

It is not the intention to give a minute anatomical description of this nerve neither to enter fully into the details of its physiological and pathological states, but to give a general idea, as far as I am able, of what is known concerning its distribution, its natural and its diseased conditions, with a few words on the treatment of the latter. The inosculations, of the various branches of the fifth nerve with each other and with their neighboring nerves, will be almost entirely omitted for the sake of brevity.

Anatomy.

Fifth, trifacial and trigeminus are names that have been applied to this pair of nerves. The appellation Fifth, is obtained from the order, in relation to the other cranial nerves, in which it passes from skull. Trifacial evidently has reference to its division into three large trunks and the part of the body to which they are distributed. Trigeminus is a latin word meaning three born at a birth and is applicable to this nerve on account of its three principal branches being nearly alike in size and importance.

It is by far the largest of the cranial nerves and resembles a spinal

nerve in having a motor and a sensative root. the motor immerging from the nervous centre anterior to the sensative, and also in the fact that the latter is the larger root and has a ganglion on it, or passes through a ganglion, before being joined by the motor branch. The inferior maxillary branch is composed of motor and sensory fibers, in this particular it bears a most striking resemblance to the spinal nerves.

The fifth nerve has its apparent origin at the side of the pons Varolii a little nearer to its upper than its lower border, a few fibres separate the sensory from the motor root; the latter contains three or four

bundles of nerve fibers, the former has from seventy, to one hundred.

The root of this nerve has not been clearly made out, its fibers have been traced in various directions by different anatomists, it suffices to say that if the majority of these have not been mistaken this nerve has a very extensive origin.

After the nerve leaves its apparent origin it passes forwards, the sensative branch being being above the motor, through an oval opening in the dura mater, here, at the apex of the petrous portion of the temporal bone, the sensative branch expands into a comparatively

loose network of nerve fibers which pass into the Casserian ganglion while the motor portion passes beneath this ganglion. The Casserian ganglion receives a few fibers from the sympathetic system, it gives off some nervous filaments to the membranes of the brain, from its anterior part emerges three large trunks; the ophthalmic, superior maxillary and inferior maxillary. The latter trunk is then joined by the motor branch of the fifth nerve.

The ophthalmic or first division is the smallest of the three; it is given off at the upper and front of the ganglion; it passes into the orbit of the eye through the sphenoidal fissure.

Just before entering the orbit the oph-
thalmic divides into three branches;
the nasal, lachrymal and frontal.

Of these branches the nasal
is placed most deeply; it passes inwards
and forwards through the orbit to the
anterior ethmoidal foramen. As the
nasal nerve passes through the orbit it
gives off a branch which enters the
ciliary ganglion; two or three long
ciliary nerves which pierce the poster-
ior part of the sclerstic then extending
forward along its inner surface, they are
distributed in connection with some
branches from the ciliary ganglion to
the iris and ciliary body; and the infra-
trochlear which is distributed to that

part of the orbicularis palpebrarum and lachrymal apparatus, the conjunctiva and integument, which is situated near the inner canthus of the eye. The remaining portion of the nasal nerve enters the cavity of the cranium by the anterior ethmoidal foramen and passing out along a groove in cribriform plate of the ethmoid continues along the side of the base of the crista galli into the nose where it divides into two branches. The internal branch supplies the mucous membrane of the septum near the fore part of the nose. The external branch decends on the inner surface of the nasal bone, supplying some filaments to the mucous membrane, then it emerges

between the nasal bone and the upper lateral cartilage of the nose and is lost in the integument of the ala and tip of the nose.

The lachrymal is the smallest division of the ophthalmic. It supplies the lachrymal gland part of the conjunctive and terminates in the skin of the upper eye lid.

The frontal is the largest branch of the ophthalmic nerve. The broadest part of the sphenoidal fissure gives exit to the frontal nerve which then runs along the roof of the orbit when over the centre of the socket it divides into the supratrochlear and supraorbital which run parallel for a short distance

when the supratrochlear passes inwards above the pulley of the superior oblique muscle giving off a communicating branch to the infratrochlear then emerging from the orbit it is distributed to the muscles and integument of the forehead. The supraorbital nerve reaches the forehead by passing through the supraorbital foramen. It is distributed to the upper eyelid, the orbicularis palpebrarum, corrugator supercilii and occipito-frontalis muscles, to the integument of the forehead and the head as far back as the occiput, and the pericranium that covers the frontal and parietal bones.

The superior maxillary or second division of the fifth nerve passes from

the cranial cavity through the foramen rotundum, it then crosses the spheno-maxillary fossa and passing through the infra-orbital canal reaches the face under the elevator labii superioris muscle. The orbital branch is the first given off by the superior maxillary, it enters the orbit through the spheno-maxillary fissure, divides into two branches which run along the outer wall and external inferior angle of the wall of the orbit and find their way to the cheek, in some persons through one foramen while in others each nerve has a separate foramen, one of these is distributed to the skin covering the temple and side of the forehead, the other joins the facial nerve. The spheno-palatine branches are two

in number, they enter the sphheno-palatine ganglion. There are two posterior dental branches, they are given off just before the trunk enters the infraorbital foramen, the more anterior is lost in the buccinator muscle and gums, the other having entered the superior maxillary bone supplies the second bicuspid and the molar teeth with nerve fibres, then unites with the anterior dental branch which is given off just before the superior maxillary leaves the infraorbital canal and which supplies the pulps of the incisors, canine and first bicuspid teeth. After emerging from the infraorbital canal the superior maxillary divides and subdivides rapidly, it is distributed to the following structures: the conjunctiva and skin of

the lower eyelid, the orbicularis palpebrarum, the muscles and integument of the side of the nose and upper lip, and the labial glands.

The inferior maxillary nerve or third branch is the largest of the three divisions of the fifth pair, it is composed of the motor root and the branch given off the Gasserian ganglion at its antero-inferior angle. The foramen ovale serves as a way of exit from the skull for the inferior maxillary nerve. Soon after leaving the cranium it divides into two trunks the anterior and the posterior.

The anterior trunk contains nearly all the motor fibers. It is smaller than the posterior trunk. It divides into six branches; the masseteric, two deep temporal

buccal, and two pterygoid. They are distributed to the muscles from which their names are derived, viz., masseter, temporal buccinator, and both external and internal pterygoid; with the following exceptions. The masseteric occasionally gives a branch to the temporal muscle and another to the articulation of the jaw. The temporal branches only supply the deeper part of the temporal muscle. The buccal gives a few branches to the temporal and to the external pterygoid muscles. The branch to the internal pterygoid is intimately connected at its origin with the otic ganglion. The branch to the external pterygoid is derived from the buccal branch more frequently than it is directly from

the anterior trunk.

The posterior trunk of the inferior maxillary divides into three branches, the auriculo-temporal, gnatalog and inferior dental. The auriculo temporal arises, soon after the division into the anterior and posterior trunks, by two heads which unite after passing around the middle meningeal artery and is then distributed to the integument of the temporal region, the pinna, the meatus auditorius externus, the tempero-maxillary articulation, and the parotid gland. The auriculo-temporal nerve has communicating branches with the otic ganglion and with the facial nerve. The latter are among the principal connections, of the many, that unite the

fifth with the seventh pair of cranial nerves. The gustatory nerve is deeply in its entire course. It runs along the inner side of the dental nerve, the inner side of the ramus of the jaw and enters the side of the tongue by passing over the superior constrictor muscle and through the submaxillary gland. It supplies the submaxillary gland, gums, mucous membrane of the mouth and tongue, and the conical and fungiform papillae. It communicates with the hypoglossal nerve and with the submaxillary ganglion of the sympathetic system. The inferior dental nerve passes downwards with the inferior dental artery, enters the inferior dental canal on the inner side of the ramus of the

lower jaw. As it passes through the canal it gives off the dental branch which supplies a filament to each of the fangs of the molar and bicuspid teeth. When it reaches the mental foramen it divides into two branches, the incisor which continues in the bone and supplies the canine and incisor teeth, and the mental which passes through the foramen and is distributed to the surrounding muscles integument and mucous membrane. Just as the inferior dental nerve is about to enter the inferior dental canal the mylo-hyoid nerve springs from it. The mylo-hyoid nerve is distributed to the cutaneous surface of the mylo-hyoid muscle and

to the anterior belly of the digastric.

Physiology.

The fifth pair of nerves supplies the integument of the face, the greater part of the integument of the skull, the conjunctiva, and the mucous membrane of the nose, mouth and tongue with general sensibility, the muscles of mastication with motor nerve force, and the conical and fungiform papillae with the special sense of taste. The tactile sensibility of this nerve is more acute than of any other nerve of the body, it is also acutely sensative to mechanical irritation and will give indications of sensibility when wounded or galvanized under conditions that will not be responded to by the spinal nerves.

Physiologists have divided the trifacial in the cat or in the rabbit behind the Gasserian ganglion with the effect of destroying sensation on the side operated upon. After the animal has recovered from the shock, the parts to which the divided nerve is known to be distributed may be pricked or cut without the animal showing the least manifestation of pain, while the opposite side retains the natural acuteness of sensibility. This experiment is a conclusive proof that the fifth is the great sensitive nerve of the face.

The gustatory or lingual branch contains fibers both of tactile sensibility and of the special sense of taste.

General sensibility is highly developed in the anterior two thirds of the tongue. If the gustatory branch of each side be divided this portion of the tongue can be cauterized without giving pain. the animal also looses the sense of taste. By placing a small piece of lint moistened with some solution that possess a decided taste and is not irritating on the different parts of the mucous membrane within the human mouth, the lip and upper surface of the tongue are found to posess the sense of taste in its most highly developed state.

The motor branches of the fifth pair are derived from the anterior trunk of the inferior maxillary nerve with the exception of the mylo-hyoid

which is derived from the posterior trunk. These branches are all distributed to muscles connected used in mastication. The lower jaw is brought forcibly into contact with the upper by the contractions of the temporal, masseter and the pterygoids when when those of the opposite sides contract simultaneously. When the pterygoids of one side contract alternately with those of the opposite side the grinding motion is produced which is so much practiced by the herbivora in preparing food for digestion. The mylo-hyoid and anterior belly of the digastric slightly depress the the lower jaw.

The concentrated arrangement, by means of which the nerve filaments of

various functions which are destributed to the different organs of mastication are so intimately connected, illustrates the beautiful manner in which Nature's works are adapted to the purposes which they are intended to fulfill. The greater part of the mucous membrane of the tongue and cavity of the mouth is supplied with nervous filaments from the trigeminus while the lining membrane of the posterior portions of this cavity and organs, which is more especially concerned in the act of deglutition, is supplied by the glosso-pharyngeal. The sense of taste is very useful in giving to the individual an idea of quality of food he is taking and by enabling him to detect impurities in it that escape being

noticed by the other senses and that might bring about a diseased condition the gravity of which would depend upon the physiological effect of the material taken into the stomach. The power to test the quality of food would be very imperfect if it depended entirely on a special sense, such substances as caustics or anything of a high temperature could be introduced into the mouth the result of which might be irremediable. Common sensation also enables us to know when the food is prepared for swallowing and to detect any particles that may remain between the folds of mucous membrane of the mouth. The fact that the tongue, muscles of mastication and part of the membrane of the

mouth are supplied by fibers of the same nerve, these fibers differing in function would suggest the idea that the parts supplied are intended to act in unison for the accomplishment of an important object. Such is the fact and that object is the act of mastication.

The fifth pair has a very marked influence on each of the special senses. To a nerve of special sensation to perform its functions it is necessary, first, that the nerve itself shall be in a condition to appreciate the impressions made on it by its peculiar exciting cause and transmit this to the brain, and secondly, that the surrounding parts allow the peculiar stimulus necessary to excite the nerve to come in contact with it.

When the fifth pair is divided the second condition on which special sensation depends is more or less interfered with by altered nutrition. We have already seen that all the organs in which special nerves of sensation are placed are supplied by the fifth pair with general sensibility.

When the fifth pair is no longer able to perform its functions the following changes takes place in the organs of special sensations. The mucous membrane of the nostril becomes softer and thicker than normal, the passages become to a greater or less extent blocked up with mucous, the air can not come in immediate relation with the filaments from the olfactory bulb, hence the odoriferous atoms

floating about in the air can not make their impression on the olfactory branches and the result is virtually the loss of the sense of smell. In the eye the pupil contracts, the cornea becomes congested and looses its perfect transparency. At this stage the inflammation may subside and vision remain good or it may increase by spreading to the iris, fastening this body to the lens by inflammatory exudation; the cornea becomes opaque and discharges a purulent secretion. Here the diseased action may cease leaving a sound retina unable to receive impressions on account of the opacity of the cornea thus producing blindness, or the diseased action may still progress ending in

ulceration and sloughing of the cornea followed by a discharge of the humors, thus totally destroying the globe of the eye. The sense of taste is destroyed on the anterior two thirds of the tongue with the loss of tactile sensibility as they both depend on the lingual nerve to convey their impressions to the brain. Filaments of the fifth pair are distributed to the anterior part of the external ear and to the middle ear indirectly through the otic ganglion. The influence of this pair of nerves over the sense of hearing is not so apparent as over those special senses just mentioned, yet if we are allowed to reason from analogy the integrity of these parts of the ear, also the natural

consistency and amount of their secretions are necessary for the perfect development of the sense of audition; these are more or less changed when the fifth pair is paralyzed, therefore when the fifth pair is paralyzed the sense of hearing is more or less imperfect.

The Gasserian ganglion appears to have a special influence over nutrition. Physiologists have found by experimenting on the lower animals that when the fifth pair is divided on the peripheral side of the ganglion nutrition is interfered with to a much greater extend than when the nerve is divided betwein the ganglion and the brain.

Diseases and Their Treatment.

Headache, toothache, neuralgia, in short all the aches and pains about the head and face have their seat in the trifacial nerve. The loss of sensation of the face or of the power of contracting the muscles of mastication is to injury or disease of the fifth pair.

Paralysis of this nerve may be partial or complete and cases of double paralysis have been observed. The most frequent cause of paralysis is a tumor pressing upon the nerve in some part of its course. The diagnosis, as to the point at which the communications to and from the brain are cut off, can be determined with more or less exactness by noting the region

ces which the paralysis exists, and the effect which it has on the special senses. When the patient is known to be labouring under constitutional syphilis or even when there is room for suspicion, iodide of potash should be given in large doses. There is a case of double paralysis mentioned in the fourth edition of Flint's Practice which "was produced by long exposure of the face to a keen wind, the morbid condition was supposed to be inflammation of the neurilemma where the nerves emerge from between the transverse fibres of the pons Varolii at the base of the brain." This case nearly recovered in three months under the employment of the continued galvanic current.

The fifth pair is a favorite seat of neuralgia, it seldom attacks all the branches of this nerve at the same time. In trifacial neuralgia pain and tenderness on pressure are usually limited to or more distinctly marked in those situations where branches of this nerve emerge from their bony canals. These oversensative spots occur in other places as over the parietal and temporal bones. It is sometimes limited to a patch on the forehead, cheek or temple, from which it never shifts, in a certain number of these cases the paroxysms return at regular intervals. This painful disease occurs most frequently in females during the middle period of life, it is extremely rare in infancy. Neuralgia is to be diagnosticated from

syphilitic periostitis about the face and from inflammation of the lining membrane of the frontal and superior maxillary sinuses. The former is known by increase of pain at night, nodes and other symptoms of constitutional syphilis; the latter by excessive flow of mucus from the nares. Neuralgia is known by the pain being in paroxysms or if continuous there are exacerbations in which the pain is variously represented to be sharp, piercing, darting, etc., the pain is sometimes excruciating, while between the paroxysm it is dull, by the pain occuring in the course of a nerve or at its extremity, by pressure on certain spots with the end of the finger causing increased pain while pressure with the palm of the

hand causes its diminution, and by there being no inflammation nor lesion.
The treatment has two objects in view; to relieve pain during a paroxysm and to prevent its return. To relieve pain the hypodermic injection of Magendie's solution of morphia is the most prompt; opium, conium, aconite, belladonna and other narcotics given in the stomach are useful. One large dose of opium will occasionally effect a permanent cure. Liniments and ointments of the more important narcotics of the materia medica will usually mitigate the pain. Trifacial neuralgia often depends on constitutional causes. To effect a permanent cure each case is to be studied separately and treated according to the

known or probable cause. Malaria generates trifacial neuralgia more frequently than any other single cause, in these cases quinine is the specific remedy, as a tonic it will also relieve cases depending on feebleness, therefore quinine will cure more cases of neuralgia of this nerve than any single article in the materia medica. Gout especially in women often appears in some disguised form, a not uncommon form of this disease is neuralgia, hence whenever there is reason to believe that the patient may have a gouty diathesis either from her mode of life or family history colchicum may be given with a fair prospect of giving relief. Calcarea

of iron in [illegible] has acts very well in a complaint of large number of cases and should be tried [illegible] cause is obscure and especially [illegible] indications are present for the use of ferruginous compounds. Counter irritants and the constant galvanic current are found very useful; valerianate of zinc, strychnia, iodide of potassium and [illegible] of turpentine are sometimes used with advantage. In persistent cases that resist medical treatment surgery is resorted to. [illegible] branch is divided or what is [illegible] excised partially. The immediate [illegible] it is perfect [illegible] the patient usually has relief for a number

[illegible] at which time the communication of the isolated nerve is reestablished and the pain returns. Sound teeth are sometimes [illegible] sacrificed when neuralgia is seated in a tender one.

Headache or cephalalgia is a painful symptom disease the seat of which may be in the peripheral branches of the sensitive or in the sensitive branches of the same nerve which ramify in the dura mater of the brain. The cervico-occipital nerves are sometimes the seat of headache and some suppose that it is at times situated within the brain affecting the sensory filaments of the substance but with [illegible]

two varieties we have [illegible] in this essay. Headache is in very many cases not a disease in itself but a symptom of some other disease on which it depends. The distinction between neuralgia of the head and cephalalgia is not very easily determined, literally the terms are the same, cephalalgia is a combination of κεφαλη, head, and αλγος, pain, and since all pain originates in a nerve it seems here cephalalgia is nerve pain of the head which is literally neuralgia of the head. Pains of the head which have the characteristic features of neuralgia in other parts of the body such as intense tenderness on pressure [illegible]

pain limited to tracts [illegible]
have been mentioned [illegible]
of neuralgia [illegible] we call neuralgia;
all other cases we will term cephalalgia
with the exception of [illegible] of
the occipito frontalis muscle. Head-
ache is extremely common. Some indi-
viduals are constitutionally predisposed
to it, the affection occurs on the
slightest provocation, which in [illegible]
cases can not be determined. Of the
cases the [illegible] is more liable to cephal-
algia and especially so about the [illegible]
menstrual period. Hunger, fatigue, excite-
ment and constipation are constant causes.
The attacks last from a few hours to
several days, twelve to twenty-four

hours is the average duration.
intensity and character of the pain
varies greatly in different patients
and even in the same one during
different paroxysms it is seldom severe
enough to prevent the sufferer from
pursuing her usual avocation,
but in some cases the pain is so severe
that the patient takes to bed and
avoids light and noise. The pain
is variously described as sharp, dull,
heavy, lancinating, or as a sensation
of fullness about the head as if it
would burst. The pain may [illegible] so
to the entire head or to only a part
of it. The paroxysms usually return
at irregular intervals. The treatment

is twofold; first, to relieve the attack and second, to prevent its recurrence. Firm pressure upon the head will often give immediate relief, stimulating the skin diminishes the pain. A saline cathartic at the commencement of attack will frequently give relief. Opiates or bromides in full doses, hydrate of chloral, and carbonate of ammonia are appropriate remedies. Evaporating lotions or fomentations applied to the head, inhalation of chloroform, or stimulating pediluvia, strong tea or coffee, the galvanic or electro-galvanic current have all proved useful in breaking up an attack of headache. To prevent the recurrence of an attack

the individual should avoid
anything that experience shows — the longer
one on, the better the health — the less
liable is headache to occur hence the
importance of good hygienic conditions.
Nux vomica, arsenic, quinine, belladonna,
and the preparations of zinc are some-
times efficient prophylactics. The
frequent want of success in the treat-
ment of ophthalgia is doubtless due
to not being able to discover and to
remove the underlying cause.

Toothache when caused by
the exposed pulp can be relieved by
applying a solution of creosote to the
cavity on a piece of cotton, or what is
better a solution of creosote and morphia

used in the same way.

Muscular rheumatism of the occipito-frontalis is distinguished from neuralgia and headache by the pain being slight while the muscle is in repose but severe when in motion and by absence of tenderness at discriminated points. When the muscles of mastication are thus affected chewing causes pain. The treatment of this disease is very much like that of neuralgia and headache; counter irritants are among the most important. Exposure to draughts of air will often bring on the pain in those who are subject to it, evidently this cause must be carefully avoided.

A curious cause of blindness, that has lately been recognized is injury of the trifacial nerve near the eye especially about the brow without any injury to the eye itself. This amblyopic result only follows contusion or similar injury, it is never caused by incision; in some cases of this kind amaurosis has been cured by division of the injured nerve. The blindness is evidently owing to the relation of the branches of the trifacial without to those within the eye.

Tetanus, either idiopathic or traumatic, always begins with

[illegible] by the [illegible] in [illegible], the [illegible] and the [illegible] accessory [illegible].

The gustatory nerve [illegible] divided by Hilton in patients who were afflicted with cancer of the tongue to relieve their constant suffering. It is an extremely valuable operation in those cases in which the cancer has reached such a stage that its [illegible] removal can not be accomplished. This measure is purely palliative. The nerve is divided in the [illegible] as it passes along the inner side of the ramus of the inferior

[illegible]
[illegible] opposite the second
molar tooth as it passes over the
floor of the mouth to reach
the tongue.

Thesis
on
Signs and Diagnosis
of
Pregnancy

Respectfully submitted
to the Faculty
of
University of Maryland
School of Medicine
by

James T. Wightson

Feb 13th 1878

This is a subject with which not only the Accoucheur, but every practitioner of Medicine should be familiar, as not only his reputation, but also the honor and at times the life of his patient is at stake, this was verified during the past summer at the University of Maryland Hospital in a case upon which our most learned and skillful Prof Christopher Johnson operated; where from the the ignorance of her former Medical Adviser a lady who had previously been regarded

as one of unquestionable virtue and high social standing was crushed with shame and disgrace, for a time, yet lived long enough to fall into the hands of those who were more capable of diagnosticating, and thereby exonerated herself before doubting humanity; and no doubt the operation would have been successful if diagnosis had been made sooner, and the tumor removed before it had attained such size, and her health so completely undermined not only by the tumor

also from mental perturbation,
I cite this as one instance of
which there are many, where
if care had been taken to
strictly [illegible] the unmistakable
signs of pregnancy the Physician
could not have erred but
rendered a diagnosis likewise
who were more proficient, and
thereby added to his reputation
and saved the lady from that
indescribable remorse which she
had [illegible]

Cessation of the menses is the first
sign that appears on which any
[illegible] can be placed, and

This is by no means a settled fact, menses may cease from various other causes; thus it may occur from exposure to cold during the catamenial period, or from mental excitement, such as great joy, sorrow, or what is more common fright, or from great physical debility caused by wasting diseases such as Phthisis Pulmonalis, or in newly married women, caused by excitement or an ardent desire to become pregnant, single women had their menstruation stopped, by exposing themselves to the inclemency of

and reflexes, which not only allows the blood to pass but also permits of a free exit. Girls have become pregnant before menstruation returns proving conclusively that ovulation may occur without menstruation, as is also shown by women becoming pregnant during lactation before their menses have returned.

[illegible] disturbances, the most important of which is the Gastro Intestinal derangement known as morning sickness which usually commences about the sixth week continues till the end of 4th month

The patient on attempting to rise in the morning to attend to [illegible] domestic duties, frequently prevented by extreme nausea and at times vomiting which may continue to such an extent as to imperil the life of the patient, and sometimes abortion has to be produced to save the Mother from a premature death, [illegible] other sympathetic disturbances, such as Headaches Diarrhoea, [illegible], Constipation and Craving for food which at other times [illegible] nauseable to the stomach, none of these signs are absolutely

certain, for who has not seen
each of them in her life
circumstances.
Changes of disposition is
another sign, there are some
ladies over whom this condi-
tion exerts a wonderful in-
fluence, as in one who was
noted for her amiability
and lovely disposition
became peevish and
faultfinding whilst hankering
for the [illegible] of those
who were irritable, conception
may [illegible] a excite in effect,
and allow the husband a
few months of peace and tranquil

those that are lively and cheerful are made lugsotum-
ic and "Vice Versa"

Mammary Changes

At about the second month the glands become tender and commence to enlarge, this is caused by their sympathetic relations with the Uterus which exists at all times, yet is [illegible] during gestation, as the foetus must depend upon the secretion of these glands for subsistence [illegible] it is extra uterine; the changes which are [illegible]

greatest diagnostic value are about the nipple and areolae; the nipple becomes enlarged and covered with brown scales, caused by the drying up of the secretion that exudes from them.

The areolae become darkened from a secretion of pigment and increase in size, forming a continued circle of small tubercles, when pregnancy has advanced to the latter stages there appears a secondary areolae which is very characteristic, it consists of a fading of the pigment

but in spots, which water
if it took, drops of grease had
fallen upon it, and removed
the coloring principle, this is
more apparent in brunettes,
The existence of milk in the gland
is of little diagnostic value as it
has been found in the breasts
of the male, this as well as
the areolae is only of diagnostic
value in the primiparae,
in single girls where pregnancy
is thought to exist, the physician
can often obtain a view of
the breasts without his
motives being suspected, and
a single glance, may induce

further examination or satisfies, that pregnancy does not exist,

Changes in size of Abdomen in the first months of pregnancy. The abdomen is flattening on account of the increased weight of the Uterus, it descends into the pelvic cavity and remains till it is too large to be contained there, it then gradually ascends till about the eight and half month when it has reached the level of the Ensiform cartilage, after which it descends, allowing more room for expansion of the lungs

Consequently the woman felt better a few weeks before delivery

Change in the Cervix

It was thought till the present century that the Cervix Uteri gradually diminished in length as pregnancy advanced, so that the duration of pregnancy could be diagnosticated by this, but on a closer inspection advanced it was found that such was not the case, but that the Cervix became softened and dilated, commencing at the os uteri externum and proceeding upwards as gestation advanced, so if a vaginal

examination is made, the
the crudite finger fails to
detect it, we may
determine that pregnancy does
not exist or if it does it is
not far advanced, because
during the 4th month the
os become thin and dilatable
during the fifth month
the cervical canal is
undergoing patulous and at the
end of the eighth month the
entire canal is effaced, hence
it will be perceived that
the woman is not only
pregnant, but also the
duration of it.

Ballottement

By this is meant the upward displacement of the foetus in the liquor amnii; which according to the laws of gravity will again descend, and in sinking will transmit a shock to the examining fingers.

Different accoucheurs practice this in different positions of the patient, the one which I would think best, is placing the woman in a position about half-way between the recumbent, and the erect, then introduce the two first fingers of the right hand.

into the posterior cul-de-sac and with a quick motion upwards, the fœtus is displaced and upon rebound will convey to the finger that there exists a floating body in the uterus; the abdominal walls should always be steadied by the left hand. It is of great diagnostic value, yet it has been confounded with a calculus or a ~~retro~~-verted uterus; it is only of use from the fourth till the eighth month, as before the former the embryo is too small to perceive, and after the latter it is too

heavy to displace it.

Intermittent contractions of the uterus is a sign which some authors lay much stress, it is detected by grasping the uterine tumor through the lap-abdominal walls; it occurs about once in a minute, and will be perceived by the hardening of the tumor. False contractions may occur from various other causes such as retained meconeo or hydrops,

Quickening

Movements of the foetus are generally perceived—

by the mother during the fifth month, yet they have existed for some time, but the muscular contractions are too weak to be perceptable, but this sign may fool the Physician; as sometimes when a woman wants to deceive him she acquires the power of contracting the abdominal walls, which simulates the movements of the fœtus so much as even to deceive the most proficient.

Auscultation

this reveals the only infallible sign. The one which I allude to is the sound of the fœtal heart. Not only

I

can pregnancy be diagnosticated but some authors say that the sex can be told to a certainty while others say they have been frequently deceived. Frankenhäuser states that the female heart pulsates twenty more times in a minute than the male, while Heintach and Lewitsky say the difference is only six or eight beats.

The discovery of the foetal heart sounds was made by Mayor of Geneva in the year 1818 but was not brought prominently before the public till 1823 when it was announced

by M. de Kergaradec.

The number of pulsations of the fœtal heart is from 135 to 140. Consequently if the Physician is careful to note the number of maternal pulsations, he cannot be deceived. The best method for auscultating is by placing the lady on the back, raise the shoulders and flex the thighs thereby causing relaxation of the abdominal muscles; place the stethoscope upon the abdomen with a moderate amount of pressure, silence should reign but sometimes it is so loud.

as to be scarcely audible.
This is the only infallible sign of
of the great number, and when
once heard pregnancy can
be diagnosticated to a certainty
but we must remember that
it cannot be heard, generally
before the fifth month.

Uterine Souffle.

This is a peculiar whizzing
sound caused by the rushing
uterine blood-vessels; it can
sometimes be heard all over
the uterine tumor, yet more
frequently it is heard only at
the lower part, upon one or
the other side, frequently

changing its position, there is but little diagnostic value in this sound, as it may occur in similar [illegible]; there exists a fibroid tumor within the uterine cavity, there is also a rustling sound heard when the uterus contains a decomposing foetus, it is caused by the formation of gases.

There are many other signs of [illegible] value such as sunken eyes with bluish circles, blotches on neck and face which was first described by Hippocrates, Pregnancy attaches some importance

is a more voluptuous sensation during prolific coition, which he says some women can tell to a certainty by this alone when they have conceived. Some lay stress upon the existence of albumen in the urine, but to these lesser signs of attach no importance. It would seem from the number of signs that the most learned Physician could diagnosticate with positive certainty when we are aware that every one of these signs except the foetal heart sound

may occur in other conditions
than pregnancy, we will perceive
at once that even the Accoucheur
may be completely deceived, if the
Physician should ponder
well upon each and every
sign lest he under a diag-
nosis which will not only impair
his own reputation but also
his profession

This Inaugural Thesis submitted to the Faculty and regents of the University of Maryland upon the subject of Measles for the Degree of Doctor of Medicine by

James E. Miller.
of Md.

February 14th 1878.

Measles.

In accordance with the rules and regulations of the University of Maryland, I herewith present to the Faculty a Thesis for the Degree of Doctor of Medicine. In presenting this paper, I ask them not to criticize it too closely; but to look over its imperfections with which I feel confident it has a great many. In preparing it, I have consulted the various authorities with which our profession is so abundantly supplied and my earnest hope has been, that while I have given their views, I have not at the same time given their words. If I have done the latter it was because my weakness and inefficiency caused me to do so and not that it was my desire. The subject of my paper has been called by various authors different names.

Italian disease is under the name of Exanthema. Stokes gives it the name of Rubeola. Others give it the name of Measles which name it most commonly bears and the one which we shall employ in the discussion of our subject. This disease belongs to that general class of affections known as the Exanthematic Fevers which have certain peculiarities in common. They all have a period of incubation during which the poison lies dormant in the system, then a fever of more or less intensity preceding the eruption, then an eruption which presents a distinct effect in each and finally they are all highly contagious. The susceptibility to this disease is very great and with the exception of children under six months

of age and upward. Persons of all races and colors are attacked.
It has been called a disease of childhood; but this is by no means correct as the observations of Ruhemann on the Faroe Islands will show. From 1781 to 1846 not a single case occurred, but in the latter year, one case was introduced by a new-comer and out of 7782 inhabitants, 6000 fell victims to the disease. Persons of all ages with a few exceptions were mentioned were attacked.
Pregnancy is no guard against the disease and in fact, disastrous consequences may follow if a person in that condition is attacked.
Blindness occurs more or less in epidemics depending upon the length of time that

has abated since its last appearance. It happens most frequently during the autumn and winter or in cold damp weather of spring. The period of incubation differs in different people, but we may safely say that from 13 to 16 days is a fair average. Authors have divided the disease into 3 different stages each one of which will demand a separate consideration. My first stage is that of Invasion, the second that of the Eruption and the third that of Desquamation.

Anatomical Appearances.

As death so seldom results from this disease alone Pathologists have had comparatively very little opportunity to make

many examinations in order to ascertain what the post-mortem appearances are. In the few cases that have been examined, there were no marked anatomic changes with the exception of some internal congestions and the blood being darker than natural. As death commonly results from the complications Bronchitis and Pneumonia, we consequently find the lesions characteristic of these diseases. When death results from Bronchitis it is from the Catarrhal form, and when from Pneumonia it is from the Catarrhal form.

Symptoms.

During the period of incubation there are no signs of the disease.

The first stage or that of the invasion

most commonly repeat little during cold and is accompanied by all the symptoms of an acute catarrh of the Conjunctiva and Air-passages. There are accelerated pulse, increased temperature and general constitutional disturbance. There is great sensitive to the light and there are frequent attacks of sneezing accompanied by a copious discharge from the nostrils. The face is generally flushed and puffy there is a hard and hollow cough from which you might suspect that a severe Laryngeal Catarrh or an attack of Croup were being developed. The Temperature if applied at this time will indicate from 102° to 103°. F. thus showing that there is considerable fever. Nausea and vomiting are generally prominent symptoms during

this stage and Convulsions very commonly occur. This stage usually lasts from 2 to 5 days.

The Eruptive stage then begins which is marked by an increase of all the symptoms and an exacerbation of the fever. The Eruption commences on the 4th day making its appearance first on the face then on the neck and chest and finally extends over the whole body occupying from 24 to 36 hours for its complete appearance. In some cases the eruption does not pursue the course described above and in fact sometimes it fails to make its appearance at all. The Eruption consists of numerous scattered red points about the size of a millet seed somewhat elevated and generally among

a small papule at the middle. These slightly
unite in some cases giving irregular
patches of a crescentic form and when
so united they are said to be confluent.
After a few days they remain isolated
the skin intervening retaining its natural
color. During this stage, the constitutional
disturbances and catarrhal symptoms usually
frequently increase and reach their highest
period. The temperature reaches its
greatest height on the 5th day and lasts
from 12 to 24 hours. The pustular
symptoms which have troubled the patient
now reach their greatest intensity and
altogether the danger to life is greatest
during this stage. Fortunately however the
intense symptoms do not last long since
the phenomena of desquamation commences

which marks the first decline of the disease. This commences on the second day of the eruption or the sixth of the fever.

The stage of desquamation now commences and the skin begins to change color and are seen falling off the desquamation of the skin. This is more obvious on portions of the body which are uncovered as the face and hands. The fever has by this time completely disappeared and the catarrhal symptoms are clearly abating. This stage usually lasts from 4 to 10 days. This covers what is called a normal case of this disease but unfortunately all the cases do not run the same course. We may have all the symptoms in an aggravated form and under these circumstances it is usual

to designate it by the name "Rubeola Malignant."
This form lacks the characteristics
extreme adynamia, restlessness, with nausea
and vomiting. There is also a form choke
by the authors which is called "Measles sine
exanthematica."

Complications.

These are very important
and the Physician should be on his guard
in order to regulate his treatment when they
arise. The complications are Bronchitis
Pneumonia Croup and Entero-Colitis.
most common and therefore the most important
are Bronchitis & the Catarrhal form and
Catarrhal pneumonia. The chest always
should be made when the breathing
becomes irregular and obstructed and
when the temperature is accelerated suddenly.

Sequelae.

Sometimes some sequelae are known of a serious nature such as Chronic Opinion, Otorrhoea and development of the Syphilitic poison. There is little to show as a sequelae especially if the individual had a tendency to this fatal disease.

Diagnosis.

The diagnosis of Varicella belonging to the Exanthem is not accurately to be determined; but they may be suspected with a great degree of probability if the disease have been in the neighborhood. After the Eruption, dot pustules appear to a great extent and the diagnosis can readily be made. It may however be mistaken for Small-Pox; but this need not happen

provided a sufficient amount of fever to
used. In Measles there are in the first
stage a predominance of Catarrhal
symptoms, while in Scarlet fever there
are greater constitutional disturbances
with glandular seated chiefly in the
Lymphatic region. Hence these differences
will not be sufficient to discriminate
between them and we will they have to
refer to the Eruption which is characteristic
of the two affections. In Measles the
Eruption first makes its appearance
on the 4th day of the fever and shows
well-marked Macular characters.
In Scarlet fever the Eruption appears on
the 3rd day of the fever and is in a
Scalular form which soon becomes secular
and finally Lectular. To distinguish it

from Scarlatina is not important; for in this affection the Eruption appears first on the 2nd day of the fever and has a prominent appearance of well-marked Trouble is most characteristic.

Prognosis.

The prognosis in a mild uncomplicated case, is good. When the symptoms are of the Malignant form or if Bronchitis or Pneumonia arise the prognosis becomes exceedingly grave and the Physician should be very careful how he speaks. When there is great dyspnoea, persistent and great acceleration of the pulse, coma and a cyanotic hue due to pulmonary obstruction an unfavorable termination is may be looked for.

Treatment.

As this disease is self-limited and therefore cannot be aborted, the treatment in a mild uncomplicated case does not require much attention in a medicinal point of view. In fact the patient will do better without medicine; for I am fully convinced that, more medicines have been given without indication for them being indicated more frequently than good has been done by them. We should however pay particular attention to hygiene in all of its bearings. The patient should be kept in an airy and well-ventilated apartment; but no draft should be permitted to strike him directly, or thermometer should be kept in the

room and a temperature of about 40° F observed. Cold-drinks should be given the patient for a two-fold object, to allay fever and to quench the intense thirst which always is present in a fevered condition of the system. Little care, however, should be exercised in their administration. Give them in small quantities and not too frequently repeated. Ice-water and Lemonade are the best. The diet of the patient should be light but nutritious, and should be given, chiefly in the liquid form. Ice-tea, Soups and Milk are the best. If constipation should exist stimulant, may be given to a great advantage; but I think that it should be highly injurious to purge.

In case the stimulating should not be received by the above methods, an abstract dose of Compound Salts or a Liquid Powder may be given. For the fever, a solution of the acetate of Ammonia will answer a good purpose. In the stage of "Desquamation" great care should be used to prevent the patient from exposure to cold or drafts, for the skin-disease complications of this disease are liable to spring up. When the symptoms take on the adynamic form, we should resort immediately to stimulants the best of these are Brandy and Carb. Ammonia. Both may be administered in milk and the great nutritious qualities of this will be combined with the stimulant.

In case Bronchitis or Pneumonia should arise behind all our efforts to prevent them, attention should be strictly given to them. Counter-irritations to the chest & Turpentine Stupes should be used. The Oil Silk Jacket is a most valuable agent to use when counter-irritations are made use of. In case Bronchitis should be the complication, moist steam should be diffused through the room, and the patient should be changed in its position in order to prevent Collapse of the lung. Stimulants should be used both in Bronchitis and Pneumonia, also the use of the stimulant expectorants, as the Muriate and Carbonate of Ammonia. After the recovery of the patient, great care should be used especially in

regard to the condition of the thoracic organs. If there be a cough attention should be directed to it. A lack some concealed lung trouble be looked up and the patients condition considered serious by it.

Respectfully submitted by
Lucien D. Wilbur
St. Md.

February 14th 1877

Thesis on Dipsomania

by

Wm. A. Stewart.

Baltimore Feb. 1878.

To the Faculty of Physic, University of Md.

Gentlemen,

In compliance with the requirements of candidates for the degree of Doctor of Medicine, I respectfully submit the following thesis, which, imperfect as I fear you will find it, I trust will receive your official sanction.

D. H. Stewart.

Diphtheria, [illegible] acute, contagious disease, and, [illegible] present [illegible] (Croup, etc.) by [illegible] in the first Quarter of the present Century, [illegible] this [illegible] in 1856. It is [illegible], a disease of antiquity, and is known by early writers under a confusing variety of [illegible]; indicating, sometimes, of the locality in which the Epidemic prevailed, at others designating the most notable symptom or symptoms, or Extension of its malignancy to [illegible] the blight domain of authorities accept the [illegible] of the Ulcerous [illegible] of the throat, [illegible] to stand anything as Diphtheria merely. [illegible] [illegible], [illegible] to a group of brilliant, original, unbiased minds, to the contrary, notwithstanding.

Notes on Convalescence :— Diphtheria is a blood poison. That the poison acts if not primarily affects the system at large, producing great prostration is a fact supported by abundant clinical observation. The incidental skin also follows the [illegible] of Septicæmia, infection from a poisoned air, Diphtheria, Scarlatina &c.

What is this poison — the septic bacteria from above incidental causes or specific poisons? Let us not darken counsel by unintelligible Greek terminology, but rather adopt a term that represents neither the Poison nor its Antidote. Recently convalescent in the house has fritted in the belief that the Simon-Meier Antifeb are about to free us near or — the pathology of bacteriaemia & Miasmatic diseases.

They first in the Diphtheritic Membrane

the opinion of Dr [illegible] Bath.
for support of the Bacterian theory, [illegible] the following language:- "If often my [illegible] which is the part of nothing [illegible] [illegible] other organisms as the Diphtheritic or Cities which are present - if Diphtheritic inflammation [illegible], these organisms [illegible] as if deprived of the original [illegible] succeeded by the Micro- and Micro-Bacteria which increase in numbers as the specific inflammation [illegible]. On the other hand, as the Diphtheritic inflammation [illegible] these Bacteria disappear and other [illegible] [illegible] very succeed" J. J. Smith Dis. of Inf. & Det. p. 91.-

The Bacterian theory of the origin, [illegible] [illegible] this discussion of [illegible] the brief scientific [illegible] [illegible] affordeth an easy explanation of many [illegible]

flowing through a conjunct the Electric circulation, viz:— On the application of the Electric fluid in the treatment necessarily the Female and Stronger bands of Electric, be obtained the inner surface of the air passages, so being moist and delicate, from a better and more defined the living process or their glandular. Often wounds, or any external surface sufficiently delicate, may form a medium for the rapid propagation and dissemination. After the Electric has penetrated the tissues, causing exhaustion, and ultimately reaching the circulation — effusion and fluids — bands of Electric, in which death is produced, as in other structures similar, by congestion and blocking of the fluid — etc. etc.

While many facts may be adduced in

Suffice it to the views of the Gentlemen before me an array of flowing facts I have but to believe (all convinced of my error) that there is an underlying cause, not yet discovered, which effects the tissues and fluids so that for disease to the formation of Bacteria - Pus has been no proof for. Microscopists do not agree that Bacteria in a specimen of Exudation is conclusive evidence that it was a result of the specific Diphtheritic inflammation.

For instance if the theory may be pushed a result for a cause - this appears probable when we learn that Bacteria Exist in considerable quantities when Diphtheria has not occurred in, been repeatedly discovered upon the gums and between the teeth in a state of health, where they give no vital indication of their presence - By seeing the Bacteria in

without the lungs which is remarkable if they are a cause of the fatal termination — pneumonia is a rare complication of Diphtheria.

It is useless to theorize further upon the Etiology of Diphtheria in the absence of demonstrable facts. It is Epidemic, probably depending upon an occult meteorological condition for its development and to err on the safe side, it is Contagious. Either not confined to any age, it is usually a malady of childhood.

Symptoms & Course:— have been given in different Epidemics and in different cases of the same Epidemic. Those occurring when the epidemic influence is at its height being, as a rule milder in comparison with those occurring Earlier. Yet there is some uniformity,

has been diagnosticated, who recognizes it there in almost every case of simple sore throat, whether the fever disease be prevalent or not, only complicate a trivial local disorder with a much more grave affection.

For the sake of brevity I will take no notice of the several forms described by authors as minutely as they, separate and distinct diseases. They are all Diphtheria — differing in quantity or determination — not in kind.

Well marked cases are ushered in with a chill, followed by more or less fever; pains and aching all thro' the system; in children from prostration. In children vomiting often occurs and is an evidence of profound septic impression. Delirium may occur but convulsions are rare and when they do supervene they are referable to uremia, perhaps. There is a

fatal exanthem. In many cases the exanthem
can scarcely be distinguished from that of a "rash" and the Pat.
may be on the verge of the grave before the
real malady is suspected.

Sallowness, especially the tongue and lips,
is a most marked feature in a great majority of cases. Early pain, the
distinctive pathognomonic signs of the disease,
viz: White patches of membranous exudate
deposited on the tonsils; it may be a simple
pharyngitis, the whole surface of the
affected part generally dotted over with fine specks
of clear exudation. Sometimes a long membranous band is observed extending down
from the posterior nares, which is soft
but very tenacious. As the disease pro-
gresses, the whole of the throat becomes
involved. Not only does the membrane
cover the tonsils, the roof of the mouth, the tonsils,

the back part of the pharynx, and the adjacent
Glands of the pharynx, the palate is seldom affected,
in some cases, the whole pharyngeal mucous of
the nose is found occluded.

The duration is one or two weeks.
Death may cut off the patient in the first
week, and in fatal cases it has terminated
within 48 hours. On the other hand, it may
continue much longer than two weeks,
but this is usually the result of consec-
utive affections or sequelæ — Pneumonia,
Albuminuria with dropsy, are frequent
complications. Other diseases, as Measles,
Scarlet Fever, etc. may occur concurrently.

Anæmia with general debility and
Paralysis are sequelæ which may continue
for a considerable time. The paralysis usu-
ally effects the muscles of the throat & mouth.

Exceptionally other [illegible] were [illegible] affected. I have noticed the exception in a number of cases, and had I judged from a single chronic paralysis of the lower extremities, would have been the rule rather than the exception.

<u>Diagnosis</u>:— This is easy when the characteristic exudation has formed, which differs from the patches and deposit of simple Pharyngitis in being tenacious and closely adherent to the mucous surface. Diphtheria is diagnosed from Scarlet-T. or by early vomiting and the efflorescence in T. latter, and absence of the characteristic tenacious exudation. The diagnosis of Diphtheria from low croup is sometimes difficult when the membranous lesion is in the larynx — the following symptoms

Points for differential diagnosis: —

Croup is ushered in by a cough:

Diph. by a chill.

Croup depends upon atmospheric changes.

Diph. does not.

Croup is not contagious.

Diph. is supposed to be contagious.

Croup comes on suddenly.

Diph. is tardy & insidious.

Croup is known by the croaking sound.

Diph. by the patches of membrane on the throat.

Croup must be promptly relieved.

Diph. is tardy in its resolution.

Croup does not affect the system.

Diph. is very prostrating.

Croup occurs chiefly in children.

Diph. may occur at any age.

Croup is apt to recur after the 6th or 7th month

Defs. [illegible] then we find the patient is not so liable to a second attack - this is usually true if the patient survives the attack and is given proper medical - medical - attention.

Prognosis: — In the majority of cases, when cerebral symptoms are absent, and proper treatment early resorted to the prognosis is favorable.

The immediate danger is from invasion of the larynx. The next danger is from asthenia or exhaustion. Death may result from syncope in the latter stages of severe exertion. The paralytic effects usually involve no danger except strangulation from paralysis of the muscles of deglutition.

Treatment: — For Dilitation,

like [illegible] absolute specific — safe and reliable at any or in all stages. But we are [illegible] in having a long list of remedies, each of which is assured on high authority to be a specific in the treatment of Diphtheria. Not [illegible] the other [illegible] which Sanguinaria "Doubtful" is [illegible] termination of a few cases, yet much good can be accomplished by treatment, by careful judicious and intelligent medication. By the words judicious & intelligent I do not exclude the knowing routinist who, with a single idea in his head, [illegible] — such as on the need of his complaining patient with Liquor Potassæ Permanganas, [illegible] the [illegible] bins on chromatic acid — another with an old [illegible] to suggest [illegible] his [illegible]

with Sulphuric Acid — state the result to
medical men and to chemical societies,
exhibit a solution of Pot. Chlorate and write
on his chalk "In the secretions". He
then run the gauntlet of medical friends
who turn all and sundry into the sanctum
of the "Sage" for advice.

To continue — the treatment is local and
general — many practitioners have accumulated and
strongly consider local medication of little importance;
in the initiatory stage, to prevent the
rapid propagation and subsequent systemic
contamination, later to prevent further tissue
from the decomposing membrane, the local
applications should be unremitting; the day
of heroic medication is past. The agents
most affected are astringents, disinfectants
and antiseptics. Iris nemorosa Lingum. The

following is the mixture [illegible] by Dr. [illegible] Children. Page 242.

℞ Acid. Carbolic gtt xj–x
Liq. Ferri Subsul. ℥iij
Glycerinæ ℥i M.

S. Apply every 2 or 3 hrs. with a camel's hair brush.

General Treatment in such a case is of the utmost importance. Although the subject is an inviting one I have already written & must be brief a consideration of even the general outline of general treatment — suffice it to say that it should be Hygienic, Antiseptic, Tonic, Stimulant, in a word, Septicidic.

Concurrent septic and bacteriotoxic may, or may not, require medication, according to what they may be, e.g., bacteria setting free toxins and hence may be both bacteriocidal & antitoxic, without the exhibition of antibiotics. Albumin is

on the other hand, requires attention lest unnecessary pain occur. Diarrhœa should not be allowed to continue — exhaustion will [illegible] without this prostrating flux. Other examples requiring interference might be cited, many of which the discriminating physician should be able to keep at bay or prepared to combat. Trachelorrhœa is usually a trivial symptom and for the credit of the profession should be avoided if the patient is dying of Disturbed Function.

Finis

A Thesis on Inflammation

Submitted to the Faculty of Medicine

of

The University of Maryland

by

Guy Fairfax Pitchlynn

for

The Degree of

Medicinae Doctor

Class 1874

Know [illegible]

elucidation, which has not

been known to the [illegible]

whom he must [illegible]

[illegible] for acceptance, and [illegible]

those acceptance hangs his

for a degree — With [illegible]

[illegible] difficulties [illegible] I had to contend, [illegible] my views of the following [illegible] to their consideration —

Causes of Inflammation.

Irritation —

This term is often confounded with that of stimulation, [illegible] in reality they differ greatly, [illegible] consider their respective [illegible] though the difference is merely one of degree. [illegible] a physiological or normal stimulus in a healthy tissue, the performance of its natural function is the [illegible]

unnatural [illegible] capable [illegible]
ing a lesion [illegible]

[illegible]

[illegible]

[illegible]

3. Hence [illegible] increase of material function [illegible]

[illegible]

[illegible]

[illegible] (may [illegible]

[illegible] as that succession

[illegible] changes which takes place

momentary

followed

[illegible]

[illegible] we are not aware [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

haired with redness, and [illegible]

bid hyperæmia of the [illegible]

[illegible]

[illegible]

function, we [illegible]

ceased flow of blood [illegible]

increased redness [illegible]

[illegible]

ulation be persevered with,

[illegible] will also be an increased

[illegible] has been observed by

all pathologists, that [illegible]

there is undoubtedly [illegible]

assuming

precedes

retardation

constitute the [illegible] feature of Digitalis action, and explains the [illegible] that the circulation is healthy is maintained in part by certain vital attractions and repulsions between the blood and the tissues, and when as the effect of a [illegible] the vitality is lessened, the circulation is retarded, even though the vessels be in a state of dilatation the most favorable conditions for a easy and rapid flow. There succeeds this stage some functional irritation of the nerves giving rise in the case of muscles to spasms and pain not only from muscular contraction

If this theory of [illegible]
[illegible] it is easy to account for [illegible]
[illegible] of the [illegible] of [illegible]
[illegible] fibrous [illegible] left [illegible]
while the corn [illegible]
[illegible]

[illegible]

[illegible]

[illegible]

This pathological [illegible]

reality of [illegible]

that the "so called" [illegible]

is the product of [illegible]

tion, [illegible]

[illegible] of inflammation. [illegible]

[illegible] to this [illegible], the [illegible]

of [illegible]

rectly from the blood, [illegible]

[illegible] found in the

blood [illegible] originally in the [illegible]

and from them [illegible]

bloodvessels, and that is this

[illegible] of inflammation

[illegible]

As an argument [illegible]

this theory, we have, as [illegible]

Mr Simon, that the [illegible]

the "so ca[illegible]" differs

from that of obstruc[illegible]

[illegible] portant respects.

(1) In having a larger [illegible]

[illegible] the [illegible]

(2) In having [illegible] vessels.

[illegible] the cornea

tends to [illegible]

inflammation, that [illegible]

[illegible]

The order of the [illegible]

(Morbid [illegible]

[illegible] accounts [illegible]

[illegible] capillaries [illegible]

[illegible]

A Treatise
on
Asthma.

Respectfully Dedicated.
To.
Richard McSherry. M.D.
Professor of
The Principles, and Practice of Medicine,
In The University of Maryland.
School of Medicine.

By.
J. D. Nixon.
Virginia.

Session: 1877 & 78.

Asthma.

Definition.

By asthma is meant difficulty of breathing, recurring at intervals, accompanied, with a wheezing sound, and sense of constriction in the chest, cough, and expectoration. To define asthma properly, it is necessary to exclude emphysema, with which it is frequently confounded. These diseases may coexist, but they are very distinct affections, Asthma being due to spasm of the muscular fibres, of the smaller bronchial tubes, and em—

physema being due to air in the cellular, areola, or connective tissue, Asthma, and emphysema, may follow bronchitis; but that does not prove the identity of the two affections. Asthma has no anatomical characters.

Clinical History.

We may class asthma very properly in the category of diseases, which illustrate the principle of periodicity. This disease is characterized by very unpleasant paroxysms, they may

occur frequently, causing a great amount of intense suffering; or they may occur at regular intervals of a few days, weeks, or it may be many months before any asthmatic symptom is experienced. The approach of an attack is often known to the patient, by certain premonitions, quite difficult to explain. Sometimes a sense of drowsiness, or heaviness warns the unfortunate sufferer of the nearness of an attack. Certain excitations of the mind, and peculiar sen-

sations, also, predict an attack. A paroxysm may be developed slowly, or very suddenly; occurring much more frequently at night than in the day time, and choosing for its favorite time of attack, the latter part of the night, or very early in the morning. During a paroxysm, the patient will not lie down, but prefers sitting in various postures, which always indicate suffering, and distress. Gasping is common, with each inspiration. The inspirations

may not be increased; but may be less than in health. Breathing is very laborious. A want of air, will cause the patient to desire the windows, and doors to be opened; regardless of the danger arising from cold. The inspiratory act is a little shortened, and performed, with a spasmodic effort. The expiratory act is prolonged, and performed with a wheezing sound. The face is pale, and often of death-like appearance. The pulse is weak, and is no doubt due to an extra amount of

blood in the right cavities of the heart; resulting from obstruction to the pulmonary circulation. The surface of the body is often cold. The countenance is anxious, and the general expression of the face, is that of great distress. The heart may palpitate, and the chest may be depressed. Speech is more or less interfered with, and the efforts to talk, call forth the deepest sympathies of the attendants. Perspiration may be in abundance. I have seen several cases of asthma, and

during the paroxysms, one not accustomed to witnessing such scenes, would at once conclude, that, death was near at hand. The paroxysms, are not always of the same severity. An attack may be light, and of very short duration; but the distress is not entirely absent. Each paroxysm engenders suffering, in proportion to its severity. An attack may last only, a few moments, or it may continue for several hours, or days. Those affected may experience a cessation

of months; forgetting almost the existence of the disease, until, suddenly, it assails them with renewed effort, and severity. Females, sometimes are only troubled with an attack, during the menstrual period. As a paroxysm abates, suffering is usually diminished, and cough, and expectoration, commonly attend; cough may continue for several days after an attack subsides, and the expectoration is sometimes streaked with blood. Asthma is frequently associated with

some other disease, viz; chronic bronchitis, emphysema, or disease of the heart. If chronic bronchitis be associated with it, expectoration will attend, before as well as after a paroxysm.

Pathological Character.

Asthma is a nervous disease, with spasm of the muscular fibres of the bronchial tubes. The spasm is frequently induced by virtue of some nervous influence, which no doubt calls into play the reflex

function, by certain nervous excitation. This affection has been called Nervous asthma, when it exists without bronchitis. At the time of a paroxysm more or less bronchitis is frequently present, but asthma may exist without any bronchitis, at all. I have no doubt that every case of asthma may depend upon some peculiar nervous action. When it coexists with bronchitis, the inflammation of the bronchial tubes, may cause a great disposition to spasmodic action, hence, I suppose, it is much more serious, when associated with chronic bronchitis, than when it exists alone,

Causation. Much may be said as to the cause. The readiness with which the muscular fibres of the smaller bronchial tubes, take on spasmodic action, is a cause, which must exist, before the conditions sufficient to develop it, will act. A great tendency to this disease is often inherited, whole families being affected similarly. Many persons are not at all liable to it, no matter what the surroundings are. It is sometimes found in infancy; when, there has been no exposure to exciting causes, which strengthens the probability, of its being hereditary.

I do not think it is settled, whether it is hereditary or not. and when we find it appearing in infancy, as well as old age, it affords some scope for argument, and diversity of opinion. Numerous exciting causes are assigned, but whether these same causes would produce it, apart from an innate susceptibility, remains to be proven, The same causes do not develop it in all who are susceptible. a cause sufficient to bring it on, in one person, will not act on another, Nay, with many individuals acts, as an exciting cause, they will suffer frequently throughout

the season of haymaking, and when this season closes, they will not be again molested, until the season returns. Hay asthma is a term applied to the affection, occurring in the summer months; other causes, except hay may act at this season of the year, but none will deny that hay is a leading cause, thus showing that all liable to it, are not acted on by the same causes. Certain emanations from decaying vegetable matter, may act as a prominent cause, in the summer months. When frost comes, those affected particularly

in summer, will, as it were, be released, and enjoy moderately good health, until, the period again arrives, when the same distressing symptoms, are called into action, Emanations from various animals will induce the paroxysms. Many persons can not handle cats, or even remain in a room with them, The rabbit will induce similar results, in many asthmatic persons, Feathers will often bring about an attack. Sleeping on feather beds, and pillows, and covering with a thinner bed of feathers, can not be enjoyed by

asthmatics. Feathers seem to be the only exciting cause, in very many individuals. The inhalation of the powder of ipecacuanha, has in some instances, acted as a cause. Dust of any kind, almost, will cause trouble, if inhaled; the dust arising from carpeted rooms, when swept, or from wheat, corn or oats, when shaken, will very generally give rise to a paroxysm. An ordinary cold will often be accompanied with attacks of asthma, in those predisposed. Indigestion will sometimes prove an exciting cause;

Much more could be said respecting the causes, but I hope enough has already been written to embrace the leading exciting causes. Asthma is much more common in males than in females, the proportion being, as two is to one, and it occurs more frequently in early, and middle life, than in old age.

Diagnosis.

In some cases it is very plain; During the paroxysms, it may be determined by the labor of respiration, and the wheezing sound associated

with each expiration. In young children the diagnosis may be difficult. Asthma may be taken for any disease characterized by embarrassed respiration, in young children. Bronchitis may be taken for this disease. In bronchitis, there is frequency of respiration with increased pulse, and a subcrepitant rale diffused more or less over the chest. Now in asthma, we have a dry bronchial rale, with but little, or no increase of pulsation, and instead of frequency of respiration, (as in bronchitis) we have labored respiration, but not increased. The expiratory act is prolonged. Laryngeal affections, and

cardiac lesions, may be found in asthmatic persons, but the rules laid down for diagnosis, will very generally enable one to determine the nature of the disease, or to which class of diseases, it may belong.

Prognosis.

Asthma does not endanger life during the paroxysms, but that it may tend to shorten life is beyond doubt. It is really a great calamity, and when its victims cannot exempt themselves, from the exciting causes, it becomes much more serious, and distressing. Some asthmatics are very long lived. It is claimed, that asthma

diminishes the capability of resisting other diseases. If pneumonia is complicated with it, death is very apt to occur. Bronchitis may also prove fatal if it is associated in a grave form. It is not generally considered a dangerous disease.

Treatment. The treatment of asthma seems to be divided into two periods; the treatment of the paroxysms, and the treatment of the intervals between the paroxysms. During the paroxysms the

principal object of treatment is to allay the severity, and mitigate the suffering, and also, to bring the paroxysm to a close, as soon as possible. Remedies without number have been recommended, to accomplish this end, and when we realize the fact, that for each case, a different remedy may be needed, we can at once see the necessity, of having at our command, as many remedies as possible. A remedy sufficient to give immediate relief in one case, may

fail totally, when administered to another. Thus, showing plainly that this disease has no specific remedy, by which it can be governed, but, its successful management, embraces a knowledge of a multiplicity of drugs. Of the list of Narcotics, strammonium occupies a very prominent position. The dried leaves may be smoked in a pipe, or, the leaves may be made into a cigarette. When the disease is not complicated with bronchitis, an opiate may cut short a paroxysm,

but it will fail in the great majority of cases. Dracontium, assafoetida, and Indian hemp are sometimes very beneficial. The bromides are thought to have great power in this disease. Belladonna ranks among the leading remedies. it must be given in very small doses. of the powdered leaves, or root, gr i may be given. It is often used in form of the extract. Dose of the extract of belladonna is from gr ¼ to gr ½. it may be given until dryness of

the throat, dilatation of the pupil, and slight dimness of vision, are produced. Dr. Flint recommends the tincture of belladonna to be given in doses of Minims. X. to be repeated, every three, or four hours, until disturbance of vision be produced. The inhalation of chloroform, or ether is in many instances, very valuable, Sometimes, the paroxysms are entirely controlled by these agents, the patient in a few moments passing from a state of great suffering

into one of entire relief and comfort. Relief is sometimes obtained from nauseant remedies; such as, Ipecacuanha, antimony, and tobacco. These measures must not be pushed until vomiting occurs, if not beneficial when nausea is reached, their use must be discontinued. If the patient be plethoric, it may be proper to bleed. Prof. Richard M. Sherry recommends sulphur baths in the treatment of asthma, & directs sulphate of potassium to be put into the water.

He also recommends the tincture of lobelia in doses of ℥ss. to be repeated, as occasion requires. also, the tincture of Mullen, and a number of other remedies commonly employed. such as - tartarized antimony, the inhalation of chloroform, and ether, and the fumes of burning nitre paper. That is, bibulous paper dipped in a saturated solution of nitrate of potassium, and dried. Strong coffee, taken hot

is a good palliative. The treatment of the intervals is of importance. The iodide of potassium, is generally given in the intervals; it may be given regularly, for a long time, in doses of grr. or X. daily. You may continue the iodide of potassium, for three or four years, or even longer, if thought necessary. This agent will act well, if bronchitis be associated.

The bromides may be used, if the iodide is not well borne. Chlorate of potassium, is sometimes very beneficial; and the usual remedies resorted to, in the treatment of chronic bronchitis, may be employed, with some advantage.

Inguinal and Femoral Hernia

Presented to

the Faculty of Physic

of

the University of Toronto

on the degree of M.D.C.M.

by

J. E. [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] different [illegible] and [illegible]

of Hernia but [illegible]

the classes [illegible] [illegible], as the covering being [illegible] [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] —

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] causi [illegible]

[illegible] viscera, also tight [illegible]

[illegible] —

[illegible]

[illegible] is usually [illegible] [illegible]
during some violent exertion and accompanied
by a sensation of something giving way in
the lower part of the abdomen. The tumor
is soft and elastic [illegible] but it
and can be obliterated by pressure, the contents
being returned into the abdominal cavity.
If now the hernia is prevented from again
descending the symptoms are arrested and
the [illegible] remains [illegible] [illegible]
suffering no other inconvenience than that
arising from being obliged always to wear
a truss, and being unable himself to reduce
hernia if it descends. The hernia may however
be strangulated from being allowed to remain
down, when the gut being distended with fecal

with a forceps and in this disclosure
we see the interest.

In order to understand the anatomical causes
of hernia, and the treatment of its irreducible
and strangulated conditions it will be necessary
to glance at the anatomy of the parts through
which it passes and to consider the force
which tends to bear upon the viscera causing
their protrusion.

In any of the abdominal cavities when
it is closed the diaphragm descends and the
[illegible] are [illegible] under a
strong contraction, this tends to diminish the
abdominal cavity and hence brings to bear
[illegible] is constrained viscera a powerful com-
pressing force, which is relieved on their being

[illegible] and [illegible] more
may be the pressure [illegible] each
[illegible] through the weakest point of these
walls this explains the great frequency [illegible]
of the hernia now under consideration the
[illegible] diaphragm posteriorly to the vertebral column
the inferior ribs and the great mass of the
muscles of the back in front and at the
sides by the abdominal muscles with the pa-
-rietal bones and being continued below into
the pelvic cavity closed by strong ligamen-
-tous & muscular walls it follows that to
make its escape the hernia must pass in
[illegible]

This result is facilitated by the [illegible]

These canals are formed by the transversalis fascia and hence contain a variable more or less loose connective tissue surrounding the vessels, the fibres of which are arranged in place and allow of that divergence movement necessary for their safety. From the nature of this tissue it offers comparatively little resistance to the hernial wedge, hence it therefore occupies these cellular interspaces in advancing from the abdominal cavity.

In canal form of which inguinal and femoral are the typical, we have a crural canals, the former transmitting the spermatic cord the latter the external iliac artery and vein and the anterior crural nerve considering first oblique inguinal hernia

is said to be an oblique hernia and
inguinal hernia is that which is said
lying over the internal abdominal ring, and
the sub-serous fascia lying outside of this, in order
enters the inguinal canal through the ring, then
becoming invested by the fascia transversalis a
part of the general lining of the abdominal
cavity, the hernia is now invested by the cremas-
ter muscle which surrounds the c. d and is
probably a part of the lower border of the
internal oblique carried down in the c. c.
of the testis. The hernia now approaches the
external abdominal ring formed by the tendi-
nous sheath of the external oblique as its inner
and superior column, a part of Poupart's liga-
ment forming the inferior and outer c. c.

[illegible] a [illegible] in [illegible] and covers
[illegible] a [illegible] in [illegible] at
an intermuscular space. It is thus joined
with which the hernia never meets the other
coverings being the superficial fascia and
the skin. In females the course and coverings
of the hernia are the same as in the male
except that the hernia is covered by the skin
of the labia majora instead of by that of the
scrotum. The direct variety of inguinal
hernia does not enter the canal at the inter-
nal ring but is protruded straight through the
abdominal walls to the external ring.
This form of hernia is not so frequent as the
oblique. The contents of the inguinal regi-

is divided into two parts or the cord must
in the remnant of the umbilical arteries and
being stretched more tightly than the peritoneum
causes the latter to project inwards in
[illegible]
The epigastric vessels internal sometimes lie on the
of this cord. It is generally in the innermost
of the fossae that the hernia commences its de-
scent. The hernia in descending is invested
by the conjoined tendons of the internal oblique
and the transversalis muscles its coats are same
being the same as those the inguinal will
the cremaster muscle.
There is a variety of ventral hernia called congenital in which the tunica
vaginalis testis is found to also the hernia

[illegible] in [illegible] articulation

some exciting cause.

There is also another variety in which the

[illegible]

[illegible]

[illegible]

vaginalis, two layers of serous membrane besides

the sac are divided by the [illegible] of the [illegible]

Inguinal herniae are more common in

males than females on account of the larger

abdominal rings of the former.

The stricture in these herniae is [illegible]

ways at one of the rings.

Femoral hernia commonly commences

its descent from the external fossa of

the peritoneum, entering the crural [illegible]

[illegible]

The lower or the external oblique muscle

[illegible]

[illegible] ligament or as it is called when

in of hernia the crural arch, an small

triangular portion being given off near

[illegible] [illegible] [illegible] [illegible]

wards and is attached along the pectineal

line presenting a sharp concave edge on its

outer border, this is sometimes designated

the space between the crural arch and the

nominate bone is occupied near the [illegible]

by the iliacus internus psoas and femoral

[illegible] [illegible] [illegible] the outer [illegible]

nerve on the outer side the external iliac

artery being next the vein between the

[illegible]

[illegible] this is intended to be [illegible]

vein and in the crural canal [illegible]

having passed into this canal [illegible]

several ring shaped vessels [illegible]

to [illegible] connective tissue [illegible]

[illegible] continues its descent in the [illegible]

becomes so firmly adherent to the walls of

the vessels as to prevent its further [illegible]

in this situation the hernia may be [illegible]

through the saphenous [illegible]

invested by the [illegible]

cases this occurring then hernias [illegible]

forbidden under the superficial fascia and

skin forming a tumor over the [illegible]

are taking place demanded treatment and treated in this way. Hernia in the [illegible] more common in women than men on account of the greater size of the femoral ring in females. They are generally small and [illegible] to [illegible] relation than the inguinal.

Diagnosis. Hernia may be distinguished from other diseases presenting similar symptoms by the existence of the tumor and [illegible] by [illegible] that it is [illegible] the seat of pain. In inguinal hernia the distinctive diagnosis between direct and oblique can be made out by the direction [illegible] the neck of the sac [illegible] the pressure over the canal to the abdomen is sometimes often impossible indeed a hernia

[illegible] the [illegible] which is made [illegible] to the [illegible] [illegible] the presence of the hernia.

The diagnosis of femoral from inguinal varicocele is in typical cases attended by no difficulty — but if the inguinal be incomplete and the femoral be near the groin the distinction may become less clear. For if it be made in these cases the position of the hernia with relation to Poupart's ligament, the neck of the inguinal being traced above this that of the femoral below — also by the greater ease with which the femoral can be circumscribed not being so [illegible] [illegible] the inguinal.

[illegible] should be a well fitting truss with a large
pad for inguinal hernia applied so
[illegible]
hernia should be smaller and convex
the use of a truss may in the case of children
result in a cure, as the rings which are crowded
in young children when drawn apart by the
development of the child close the canal
If the hernia be irreducible taxis should
be resorted to the leg being flexed on the thigh
and [illegible]
towards so as to relax the parts in
taxis the pressure should always be exerted
in the direction of the canals by which
the tumor descended

hernia is called irreducible when it is not drawn by manipulation and it may also be caused by position when if the patient is put to stool by the influence of an anodyne with the head varying and the pelvis elevated the reduction of hernia will often result.

If the hernia becomes strangulated and cannot be reduced by any of the above means it becomes necessary to resort to an operation for the relief. The bladder [illegible], with a view [illegible] should be made to the inner side of the hernia if it be a femoral, ~~or inguinal~~ hernia and the [illegible] be cut through over a director until the sac is reached an attempt should be

[illegible]

[illegible]

the left hand should be passed into the constriction and a probe provided fastened along the finger laid flat upon it the edge not being turned up until the incision is to be made which should extend directly across the tumor to a point at the [illegible] of the tumor to be opened the incision through the skin is to be made directly over the sac and the incision may be of sufficient directly outwards if it be necessary to open the sac, and its contents be found of an ashen grey color and sodden and emitting a putrid odor the wound must be left open & packed

[illegible]

[illegible] and air, [illegible]

[illegible]

Prognosis — [illegible] [illegible]

may always be kept up by a mass [illegible]

[illegible] in cases of kerato[illegible]

in those cases where the structure has

[illegible] without opening [illegible]

[illegible]

A Thesis on Typhoid Fever.
Respectfully submitted to the
Faculty of the University of Maryland.
School of Medicine.

By

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of

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A. D. 1878.

Typhoid Fever -

Definition. Typhoid Fever is also known as Enteric Fever and Abdominal Typhus. It is a febrile disorder, characterized by an inflammatory affection of Peyerian or agminated, together with the solitary glands of the small intestines, and the mesenteric glands - History. Typhoid fever is a disease that occurs throughout the whole country, occurring for the most as an endemic but occasionally assuming the form of an epidemic. It attacks all classes of people: though the young are much more liable to it than the old. It occurs most often between

the ages of fifteen and twenty five. after the latter epoch the liability to attacks diminishes. The disease generally occurs in the autum.

Anatomical Characters.

There are certain special lesions in this disease, which are highly interesting and very important. They are seated in Peyer's patches and, the solitary and mesenteric glands of the small intestines. The enlargement is from a morbid product within the sacks. The altered condition of the glands occurs right early in the disease, and is rarely ever completed before the end of the first week.

If death occurs within the second week, sloughing is in progress. Sloughing is due to decomposition, owing to want of circulation. Perforation is liable to occur in one or more of the ulcers. The opening in the ulcers is very small, not larger than a pin's point; but sometimes they are much larger. The number of glands, which are affected in different cases varies. The spleen is more or less enlarged and softened. The kidneys, liver and lungs are also more or less affected.
Inflammation of the gall bladder sometimes occurs; and minute ulceration in pharynx and

oesophagus are observed in small proportion of cases - In a small proportion of cases ulceration is found in larynx & trachea. most of the foregoing lesions are peculiar to typhoid fever; in a greater or less degree they occur in this disease and no other.

Causes. Typhoid Fever is not restricted to any geographical limits; it is endemic in every part of the globe. various causes may produce it. Those who are exposed to the influence of defective drains and foul and overflowing cesspools are very liable to take the disease - especially if the water and other articles used

for food have been mixed with the fetid gases emanating from cesspools &c. The milk of a cow has produced it. the cow having used the water that had been contaminated with water coming from privies. Both sexes are liable to the disease It most always occurs in the young. This disease may be communicated from the sick to the well, but under ordinary circumstances it is not contagious.
It is believed by some, when it is communicated the special vice or poison is derived from the intestinal discharges.
Some authors entertain the idea, that the disease invariably

proceeds from a special virus contained in the excreta, and they account for the prevalence of the disease by the dissemination of the virus in emanations from water closets, obstructed drains and cesspools. The period of incubation is generally about two weeks. The disease is very rarely experienced twice - a person is rarely ever affected the second time. Symptoms. This fever as a rule is developed gradually - but occasionally it attacks rather suddenly. The forming stage is characterized by chills more or less pronounced, languor - loss of appetite - malaise and general

debility - rose colored spots, diarrhoea and epistaxis - There is head ache and pain in back, limbs and occiput as the disease advances. The abdominal symptoms are experienced right soon after the attack - The eruption is observed during the first two weeks - The hearing becomes dull and the countenance presents a dull listless expression -
The most important symptoms are diarrhoea - tympanitis and rose colored spots.
When the disease assumes a violent form the faeces and urine may be passed in bed - Sometimes it is due to paralysis of the sphincter muscles and

very often it is due to indifference and reluctance to make any effort.
Other symptoms referable to the nervous system, denoting gravity of disease are delirium grasping at invisible objects - picking the nose and pulling at the bed clothes.
The tongue generally presents morbid appearances: it may be simply furred or it may present a whitish, yellowish, brownish or even a black appearance. Sometimes the coatings are thrown off once or twice or they may be thrown off several times, and the surface is then usually reddened.

when the coating begins to exfoliate - the surface being moist and of a natural color - is indication of convalescence. The surface of the tongue is sometimes reddened - smooth - or glazed and is frequently dry and hard; and sometimes becomes cracked and deeply fissured - In advanced cases the tongue is protruded with some difficulty, and when protruded may not be with decorum - apparently from forgetfulness. In bad cases after a week or ten days black or dark matter called sordes are apt to collect on the teeth. A rare, but somewhat characteristic

complication is inflammation of one or both of the parotid glands. At a general ulcerative suppuration takes place and sloughing of the areolar tissue. This complication adds to the danger and retards convalescence. Diarrhea exists in right large proportion of cases and belongs among the diagnostic symptoms of this disease. It is a prominent symptom in proportion as the intestinal lesions are extensive. The discharges have a yellow ochre color. When hemorrhage occurs it is late in the disease and is from the intestinal ulcers. Tympanitis gurgling, tenderness or pain in right iliac region - enjoined

with diarrhoea and ochre colored discharge form a group of symptoms highly diagnostic of this disease. If perforation of intestine occurs will produce peritonitis which is developed abruptly. The sudden occurrence of notable tenderness diffused over the abdomen and abdominal pain increased tympanitic distension with frequency of pulse, prostration haggard expression of countenance point to peritonitis from perforation. The most important symptom referable to the skin is the characteristic eruption, which has been mentioned.

The eruption is limited to the body, and is of a rose or pink color. They are called lenticular or rose colored spots. They are slightly elevated, and can be felt, if the finger be passed slightly over them. The number is generally small, but sometimes they are very numerous. They occur and disappear from time to time during the fever. The eruption appears between the seventh and fourteenth day - average about the ~~i~~ tenth day.

The pulse is generally more or less accelerated. The acceleration varies in different cases and in different periods of the disease

in some cases. As a general rule the gravity of the disease is in proportion to acceleration of the pulse - when the pulse exceeds 120 per minute the disease is right grave, and as the pulse is increased so is the gravity of the disease increased - when the pulse is increased very suddenly, it denotes the occurence of some important event such as pneumonia and peritonitis. The thermometer is ~~shows throughout the~~ disease a variation of temperature The maximum is in the evening and the minimum in morning The greater part of the disease

the temperature is raised, but under some circumstances it may fall below the standard of health. The temperature generally increases for the first five or six days, when it reaches about 103° Fahr. When the temp. rises higher than this point the prognosis is unfavorable. When there is a decline of temp. in morning denotes convalescence When temperature rises to 106° to 108° in morning denotes the approach of death.
The urine is of a higher specific gravity and is not so abundant. The urine is sometimes retained and the bladder becomes very much distended

The career of fever rarely ends abruptly - the termination in convalescence is gradual. The average duration is about three weeks: it may run much longer or it may not be so long.

Diagnosis. This fever is to be discriminated from other essential fevers, more especially typhus and remittent fever. The diagnosis is to be made by ascertaining the presence of diagnostic symptoms of typhoid fever and the absence of diagnostic symptoms of other fevers. The most prominent and characteristic symptoms of typhoid fever are the following: The gradual development -

The absence of marked remissions—
the abdominal symptoms—
diarrhoea—with ochre colored
dejections—typhonitis—tenderness
in the iliac region, gurgling
the occurence of epistaxis and
the characteristic eruption.
We must also take into consider-
ation the time of year and
remember the disease most
always occurs in the
autumn; and most always
attacks the young or middle
aged. The temperature increases
for the first four or five days.
Typhoid fever may be confounded
bronchitis—pneumonia, meningitis
and acute tuberculosis—
Bronchitis can only be mistaken

Swift.

in the early part of the disease, as the disease advances the characteristic symptoms of the fever will lead to a correct diagnosis. When pneumonia exists you can tell by physical signs. The differential diagnosis is to be based on facts which show the existence of fever prior to the occurrence of pneumonia, and the characteristic symptoms of the fever - the abdominal symptoms and the eruption. Sometimes there are typhoid symptoms and it is then called typhoid pneumonia - in such cases the patient is very much prostrated, and is low and delirious at times.

In acute meningitis there is most intense cephalgia - the patient can not bear the light and sounds there is delirium early in the disease - vomiting is prominent symptom. There is constipation and there is no tympanitis and the iliac tenderness is absent. The thermometer is of great value in making out the diagnosis in the early stage before the eruption appears. If typhoid fever is suspected place the thermometer in axilla and if the temperature is found to increase from day to day it is a good sign the disease is typhoid fever -
In early part of the disease the diagnosis is not always made easy - Some delay -

is necessary to arrive at a positive diagnosis.

Prognosis. The mortality is greater in some localities than others, and the disease is more fatal some seasons than others. There is considerable variation in the death rate in different collections of cases occuring at different places and periods. As regards age the lowest rate of mortality seems to be between the ages of ten and fifteen. Death is generally attributed to complications such as pneumonia - hemorrhage and peritonitis chronic disease may lead

to a fatal result - for example chronic disease of the kidneys. Sometimes the severity of the abdominal lesions produce death. In majority of cases, the mode of dying is by asthenia. Convulsions and active persistent delirium usually denote great gravity of disease and most always ends fatally - when the pulse becomes very feeble and frequent the prognosis is unfavorable - when the temperature in axilla exceeds 105° Fahr. - it is indicative of great danger. a temperature of 106° or 107° or upwards is a fatal prognostic. while on the other hand a temperature

considerably below the minimum temperature of health is an unfavorable omen - A favorable prognosis may be entertained ~~as long~~ as long as the nervous symptoms are not very great and the pulse not feeble nor frequent - The prognosis should always be guarded - Perforation of intestines and coma are liable to occur at any time - There is danger of perforation in convalescence never despair - even if the symptoms denote the greatest gravity.

Treatment - The disease is self limited - there is no abortive treatment - The patient must be sustained from the first. The expectant

Treatment should be pursued.
If the bowels are loaded give a mild laxative. A cathartic is rarely indicated. An emetic may be given if the stomach requires evacuation. Cold water is recommended in the form of an affusion. The cold bath, the wet sheet or sponging the surface of the body. Digitalis and veratrum viride are used to lower the temperature and at the same time will diminish the frequency of the heart action. The veratrum viride should be given very cautiously. It will produce nausea & prostration.
The mineral acids are very highly recomend by some authors.

The dilute phosphoric acid may be given in ten or fifteen minims every hour or two. The hydrochloric and nitric acid. twenty minims of the former with ten of the latter every three hours. when the patient has high fever give nitrous powder and when the skin is hot and dry give crushed ice and apply cold and tepid affusions. In every part of the disease cephalique claims palliative treatment. when the patient is very restless a full dose of opium will often produce sound and refreshing sleep. when delirium occurs and is a prominent symptom opium or some other anodyne should be administered.

The bromides in some cases have a tranquillizing effect. When diarrhoea occurs it may be arrested by giving opiates and astringents by the mouth or rectum. When there is a large accumulation of gas in the large intestines, producing tympanitis, and occasions much discomfort, an enema of turpentine may be administered. At times the abdominal lesions are very great. When perforation of the intestines occurs peritonitis and hemorrhage will follow. When perforation occurs the patient most always dies. The small chance of recovery depends on the free use of opium and measures to support the forces of life. Hemorrhage calls

for astringents - such as tannic acid and Acetate of lead and opium. When the tongue is very red, dry and parched - the skin hot and dry the Oil of turpentine is a very valuable remedy - give ten or fifteen drops every two hours in emulsion - when ulceration is suspected the Oil of turpentine is one of our very best remedies. The urine should be examined from time to time with reference to urea - amount of urea. If there is a deficient amount of urea - uremia is to be apprehended and if possible be prevented. When there is a deficient amount of urea diuretics are indicated of the tonics remedies the

Sulp. quinia is good given in three or four grain doses three times daily – Alcoholic stimulants enter largely in the treatment of this disease. Feebleness of the circulation as denoted by the pulse and heart sounds call for the use of stimulants and ought to be given as regard quantity in proportion to feebleness of the circulation. When pulse is over 120 per minute denotes feebleness; and above this number denotes feebleness in proportion to frequency. When the pulse is above 130 per minute always denotes a degree of feebleness of circulation.

undering supporting measures highly important. When stimulants are administered and the tongue & skin become moist - they may be continued but if there is no effect on the skin, tongue and nervous symptoms - the stimulants should be withdrawn for awhile. commence with a small quantity - half an ounce may be given, and the amount may be increased or diminished as the circumstances of the case demands -

Among the most important hygienic conditions is an abundance of pure fresh air, in the sick chamber -

The evacuations should be immediately removed - Antiseptics should be used freely in the chamber - The diet should be in a liquid form - and nutritious. animal broths eggs and milk with some farinaceous form of food is very good - for the patient milk is one of the most important articles of food.
During convalescence small quantity of alcoholic stimulants may be given - An excess of food can be avoided by taking food at short intervals.
Solid food should not be allowed till convalescence is declared.

Valvular Lesions at the Aortic Orifice

by

T. Barton Brune

January 23° 1878.

Valvular Lesions at the Aortic Orifice

In entering upon the consideration of such a subject, it is hardly with the hope of adding anything to the already advanced state of knowledge regarding it - as that seems scarcely possible even for one especially well versed in Cardiac pathology - it is simply our object to condense into a comparatively brief space all the important practical facts, within our reach, which are now known about Aortic Valvular lesions their pathology - symptomatology, and modes of treatment; reserving to ourselves the right to make any suggestions, with reference to this subject, which in our humble opinion may seem proper.

Rousseau has told us that man is perfectible, a statement which most thinkers

of the present day regard as true. If this be a fact, man must travel towards this ultimate goal. That man has advanced since the beginning is manifest, whether it be true or not - "that thro' the ages one increasing purpose runs." Even tho' during stormy periods of the world's history some arts have been "lost", yet in the main all those of real use to man have not only been preserved, but have been greatly promoted and developed. If such is the case with regard to material Art and Science in general, how especially is its truth manifested in the progress of the "Healing Art."

As for instance during our Century in Mechanics and Hydrostatics we have the application of steam to railroad and steamboat engines and machinery of all sorts - as in

Optics we have the vast improvement in the Microscope - As in Chemistry the discovery of Dalton's laws of Atomicity and Multiple Proportions, and the consequent theory of Equivalency - As in Electricity we have the discovery of the Telegraph and from that the newly discovered Telephone - As in Astronomy the discovery of new Planets and Satellites adding additional proof to the truth of the laws governing their motions - So in Medicine we have vast strides towards a more accurate and extensive knowledge of Disease in all its varied forms. The application of electricity to the treatment of disease - the deep insight into Physiology and Pathology gained by the Microscope - the introduction and ~~[illegible]~~ general employment of the active principles of drugs - the invention and improve-

ment of Speculum - the discovery of complete anaesthesia, and the recent introduction of Auscultation and Percussion - all have combined to give an accuracy to Diagnosis and a certainty to Prognosis, which to our fathers in the Profession would have seemed almost incredible.

While all this progress has been going on in general medicine and in the particular branches of the greater whole, perhaps in none has greater progress taken place, certainly within the last half century, than in diseases of the thoracic viscera, notably in those of the heart. The inauguration, we might almost say, of the science of Physical Signs has marked an era in the history of intra-thoracic diseases which promises to be a brighter and glorious one.

That the ancients were ignorant of the true functions of the heart is clearly proved by the remarkable roles the heart was supposed by them to play in the Human Economy; and of course, as its functions were unknown, much less were the ancients acquainted with structural disease of the organ. They spoke of it in a general way as forming with the Brain and Lungs the Tripod of Life. They knew that traumatic injuries to the heart almost invariably proved fatal. But there their knowledge stopped and they began to speculate.

The heart was regarded as a sort of living gas pump and the arteries as air or gas tubes to convey this mysterious ~~gas~~ vitalizing gas throughout the organism. To us it seems almost incredible that this theory claimed

have stood the test of centuries, but it was not until Harvey cleared up the mists of ages and discovered one of the grandest parts of the Human Economy. But this only made known the Physiological functions of the heart, and almost as little was known of its organic disease as before. Not before Laennec's day, the father of auscultation, was a real insight obtained into the pathology - etiology and signs of cardiac disease. Before the days of Laennec and Louis the Profession was as much in the dark as to the pathology of diseases of the heart and lungs as we are now with regard to that of Scrofula - Tuberculosis or Cancer.

Improvement here could seem to comfort every but as usual there are some people - "lamentators

tempora acti:- "old are always croaking that medicine has made no progress. They say "Galen mentioned this - ~~or~~ Hippocrates knew that - Paracelsus was familiar with that theory. all this was known long ago - modern medicine is no better than the old - there is nothing new under the sun."

To such we would say - "compare the present state of medical ~~knowledge~~ knowledge with that of any previous period of the world's history, and say, if you can, that no improvement has been made." If one of the "old masters" in medicine were to go round the wards, of one of our modern hospitals, with a good Anesthetist, and hear him say - this man has a small point of deposit in his lung at this point - and this man

has regurgitation of blood at the Aortic orifice" and that was told him it was certainly there beyond all cavil or question, we venture to say the "old master would feel rather uncomfortable at his ignorance, and he at least would be candid enough to admit that the moderns do know "a thing or two" of which the ancients were ignorant.

Our knowledge of Cardiac disease at present is such, that the Conservatives in the Profession are wont to complain that we know too much Pathology - a great deal that we know is practically useless - organic disease of the heart is virtually incurable and the palliative treatment for all kinds of cardiac disease is about the same. Granting that organic heart-disease is incurable, we contend that too much

Physiology, or Pathology, cannot be known, clear also our knowledge helps to render Diagnosis more certain, and clears the way for the so-called palliative treatment being always the same, which may in one case be the proper treatment, may in another be directly and positively injurious.

With this somewhat lengthy panegyric on the progress of Medicine in modern times let us see if our statements are warranted by facts, and if our knowledge really is so advanced, since we have seen that the ancients knew absolutely nothing of cardiac disease.

But as time and space forbid the consideration of all the organic lesions of the heart we will confine ourselves to those of the Aortic orifice. But before proceeding to the consideration of diseases of this organ, let us consider first the position of the heart within the thorax.

in health and the normal physical signs of the cardiac region, as recalled by Inspection - Palpation - Percussion and Auscultation. Assuming the gross and histological anatomy as well as its Physiology known, let us recall the position of the heart in a healthy thorax. The heart is situated between the 2° and 6° ribs in front and the 5° and 8° dorsal vertebrae behind, contained loosely, except at its base, in a fibrous bag - the Pericardium - which is reflected on to the great blood vessels. It lies upon the diaphragm with the right auricle and ventricle towards the front, and the left rather backwards, behind the lower third of the sternum, projecting less into the right than the left side of the chest, the base being directed upwards backwards and to the right, the apex downwards for-

wards and to the left. The upper part of the base extends about an inch to the right of the sternum, the aorta being given off directly behind, the pulmonary artery a little to the right of this bone. The apex, partly covered in front by the lower edge of the upper lobe of the left lung, extends down as far as the 6th rib and towards the left as far as a vertical line let fall 1/3 of an inch to the right of the nipple. Inspection shows both sides of the chest equal, unless the individual use one hand much more than the other, and the apex can sometimes be seen beating in the 5th intercostal space a little to the left of a vertical line drawn through the nipple, when the individual is sitting or standing erect. Palpation yields an im-

pulse felt over the whole cardiac region especially at the point of the apex beat. Percussion outlines a region enclosed between a vertical line drawn from where the 4th rib would intersect the sternum, if the bony portion were prolonged, meeting a horizontal line drawn across from the fifth intercostal space forming the right angle of a triangle whose hypothenuse is a line drawn from the upper extremity of the vertical line to the point of the apex beat - over which space percussion gives a resonance of appreciably less intensity and higher pitch than normal pulmonary resonance; this space is called the region of "superficial cardiac dulness". The rest of the cardiac region except that behind the sternum, where the vacuum of anterior mediastinum in-

ventricle between heart and sternum, is covered with lung tissue, and the resonance from percussion over this portion of the lung yields the same resonance as over the other superficial portions.

Auscultation gives two soft muttering sounds, called first and second, and represented by the familiar l-ub-tub; then comes an interval of repose during which no sound is heard. The first sound of the heart is produced by the flapping back of the auricule-ventricular valves, and is intensified by the muscular contraction of auricle and ventricle and the impulse of the apex against the thoracic walls. It occurs during the systole, and is synchronous with it and the pulsation in the arteries. The second sound of the heart's systole,

produced at the beginning of the diastole or period of the heart's dilatation with blood, is caused by the flapping block of the semilunar valves. The interval of repose is also during the passive dilatation with blood in during the second half of the diastole. If we follow Balfour and Lawson in dividing the rhythm of the heart into ~~than~~ tenths, 4/10 will be occupied by the systole and 6/10 by the diastole; of which 6/10, 3/10 are taken up by the second sound and 3/10 by the period of repose; and any marked alteration in the character, or relative time of these sounds will indicate disease of the heart or blood. Considering then the physiological sounds produced by the heart, it is well known from observation as well, as from reason that

the aortic valves open during the systole and close during the diastole, and that the opening is due to the pressure of the blood driven against them by the contraction of the heart muscles, while the valve is closed by the returning blood. There has an impulse backwards as well as forwards given to it by the arterial rebound, ~~and~~ some, of it being forced ~~back~~ between the leaves of the valves, and into the sinuses or pockets of Valsalva, pressing the cusps together and closing the orifice, ~~but~~ before a small portion has regurgitated into the heart. In health there is but one sound produced at the aortic orifice, during the diastole, and heard best at the base of the heart, and one would suppose distinguished most readily over the sternum. But this is not the case, probably because

there is a vacuum between the aorta and the sternum so that the sound has to be conveyed to the walls of the thorax and thence to the listener's ear by the fibrous tissue of the pericardium and lungs. ~~so that the~~ The best points to hear the sound are in a horizontal plane either side of the sternum, but, as on the rt. side the sound produced the valve of the pulmonary artery obscures that of the aorta, closure of the aortic valve should be listened for a little to the right of the sternum in the 2° intercostal space. Such then being the healthy condition of the heart, what are the causes which produce disturbance of this condition, and what are the nature and manifestations of this disturbance?

It is a well known fact that in foetal life

the left side of the heart is much less liable to disease than the right, as it has much less work; whereas in adult life the converse is true, ~~and~~ or the left side is more peculiarly liable to be affected by disease, from three causes especially viz - the greater amount of fibrin and oxygen in arterial than venous blood, and the greater amount of muscular force required and furnished to propel the blood throughout the organism than merely furnished right to the left side of the heart through the lung structure. Hence it may be taken as a general law that, unless there be some congenital malformation, before the ~~closure~~ permanent closure of the Eustachian valve and the obliteration of the Ductus arteriosus, about the 10 day of extra-uterine life, usually ~~occasions~~

diseases of the aortic and mitral valves are rare, and stenosis more common, especially those of the aortic valves, almost in direct ratio to the age of the subject. Hence are lesions of the aortic valves more common in advanced adult life; and taking all ages into account they are ~~was~~ of next most frequent occurrence to those of the mitral.

As to the causes ~~they~~ which produce this ~~lesion~~ affection, they verily are "legion". As these valves are of a fibro-serous tissue they are of course liable to all diseases which can occur in the same tissue in other parts of the body, modified only by position and function. So far as we know, idiopathic valvular disease does not exist, although inflammation occurring

in the valves from any cause may spread to the Endo~~carditis~~ and Myocarditis, as also Endo- and Myo-carditis are fertile sources of valvular affections, and hence what causes the one may cause the other. Indeed as the valves are nothing but folds of the lining membrane of the heart and arteries, with a little more connective tissue and the fibro-cartilaginous rounds at the extremity, it is easy to see ~~that~~ how close must be the connection between the etiology of Endocarditis or Aortic disease, and that of the diseases affecting this valve. As Endocarditis is caused by Rheumatism - especially of the acute articular form - Bright's disease whether acute or chronic - Measles - most of the eruptive fevers (according to Bel-

rote and Weber) - Syphilis - chronic functional disturbance of heart itself etc. It also may aortic valvular affections be caused by the same. But in addition to these causes, as the aged are most subject to affections at this orifice, and as atheromatous degeneration most frequently occurs in the blood vessels of those advanced in years, from the close proximity of the aorta and the similarity of structure of its lining [illegible] cover and [illegible] these valves, this cause is the most frequent of all sources of disease at this opening. It is an interesting point to notice here that Virchow states, and is supported in the statement by Niemeyer among others, that Endocarditis, including also inflammation of

the valves is not accompanied by exudation, but ~~that~~ the inflammation commences in the external layer of the Endocardium, which becomes softened and infiltrated by a liquid like mucine; a proliferation of cells taking place, and the external layer becoming a thick homogeneous membrane having Epithelial cells imbedded in it. In addition to this small red villi form upon the free surface of the Endocardium, consisting of connective tissue, cells fully developed at the bases of the villi, but the apices are soft and gelatinous, made up of imperfectly formed bibro-cellular corpuscles. These villi may aggregate about the valves, and on these under consideration more especially about the Nodule of Arantii;

but these are to be distinguished from the nodules and from the fibrinous deposits themselves which collect upon the valvular vegetations. Besides the valve itself is liable to hypertrophy and atrophy, by which stenosis or insufficiency may be caused, or as sometimes, tho' rarely happens, one or more of the leaves of the valve may be glued to the walls of the aorta, producing certainly insufficiency perhaps also stenosis. There may likewise be perforation of the leaves of the valve; yet although small perforations are not infrequent, those large enough to produce abnormal sounds are not common. The great consequence of these pathological changes is to produce one of two things already mentioned, either

a narrowing of the aortic orifice called Stenosis, or an insufficient coaptation of the leaves of the valve, allowing regurgitation of blood, which is naturally called Insufficiency; or perhaps both may result from the anatomical conditions.

To form a diagnosis of either of these conditions first are to be considered, the symptoms. A thing very fortunate for individuals afflicted with this malady is, that they rarely have to take to bed unless in extremis; indeed a remarkable fact connected with organic disease of the heart is, that the subjective symptoms may be so imperceptible that the individual may be perfectly unaware that he has anything the matter with his heart; a thing which is not likely to occur in functional disturbance

of this organ especially in dyspeptic or hysterical women, as almost any practitioner can testify. There may or may not be pain, tho' it is generally present if there be faulty innervation. But certain symptoms will always be present if the disease lasts long enough, and from an accurate knowledge of the anatomical characters of these lesions a correct conception ~~accurate knowledge~~ of what these will be can be formed. From either lesions, or insufficiency the first consequence would be a smaller amount of blood circulating through the arterial system, hence would result insufficient nutrition of the tissues and anæmia, with congestion and more or less complete stasis in the venous system, with consequent local or general dropsy.

But fortunately the disease is not allowed to run riot in the organism without an effort on the part of nature to counterbalance, as far as possible, its injurious effects. Hence the compensating hypertrophy of the cardiac walls. As in simple Stenosis an insufficient amount of blood is sent to the organism, so in simple hypertrophy is there a superabundance sent out from the heart; but so nicely is this . . . . . compensating force regulated and adjusted by Nature, that, not until the limit of her unaided power is reached, is there a lack of blood to any part of the organism. Also in Insufficiency, uncompensated by hypertrophy, although a sufficient amount of blood for the wants of the orga-

mism is sent out and the aorta fully distended, yet, when the arteries rebound in virtue of their elasticity, contracting on the contained blood, a certain amount regurgitates back into the heart through the imperfectly coapted valves, ~~[illegible]~~ and although the amount which actually reaches the tissues is propelled by the same force as the minimal amount would be, yet there is not enough to supply the tissues with their normal nutrition, and the result is the same as in incompensated stenosis. Such indeed would be the case, were it not for the fact, that the tissues never receive their full amount of food if nature can give it them, so as in stenosis the impediment

the venous blood, so also in insufficiency the presence of blood in the ventricle after the systole is prone, stimulates the cardiac muscles to greater exertion and the result is hypertrophy - eccentric in insufficiency. But it must be remembered that as there is an enlargement of the ventricular cavity in eccentric hypertrophy ~~and insufficiency conspira~~ ~~to produce a fatal apoplexy~~ an abnormal amount of blood will be forced in the arteries at each systole unnaturally distending them, which leads to excessive rebound, and hence the danger that there will be congestion if not rupture of the arteries in the large viscera notably in the brain, and the danger of acute brain apoplexy in this form of car-

dence, disease. This state of things, gives rise to the peculiar pulse called the "water-hammer pulse," where the sudden full distension is felt and then the rapid dying away of the impulse under the finger, and this is more marked the higher the arm is raised, if it be the radial pulse which is felt. Sometimes, merely from the aspect of a patient, can an idea be formed of what cardiac lesion is affecting him. If a patient be pale and anæmic the likelihood is that he has Stenosis rather than Insufficiency, supposing of course that he has organic affection of the aortic orifice; while a hearty robust or even plethoric appearance is, under the above conditions rather indicative of insufficiency. Bearing in mind the

condition of things it is easy to see how in stenosis there will be anaemia, even before fatty degeneration and dilatation have taken place, and how a patient with Regurgitation may seem even more robust and apoplectic than in health. But if both affections are present in the same subject, anaemia will finally result, even tho' the symptoms of insufficiency may preponderate for a time. The most common symptom of this, as well as of almost all cardiac affections, is dyspnoea; in the earlier stages perhaps only after violent exertion; a point of distinction between heart and lung troubles, tho' the dyspnoea is also constant in the later stages of cardiac disease. There may or may not

be cough, or if present it may be dry and hard or accompanied with expectoration, which may either be of a serous, or bloody character, or there may be even a hemorrhage from the lungs due to their congestion. Also there may be great giddiness and fullness about the head, especially in insufficiency, and back ache before the expiratory muscae volitantes or hemorrhage from the nose. In insufficiency there is, as before mentioned, a tendency to arterial congestion of the great viscera especially of the brain, with all the symptoms which such congestion will give rise. But if dropsy occur during the course of this form of cardiac affection it is generally only after the mitral valve has become insufficient through ventricular dilatation, and

there may be dropsy with effusions into the large cavities from stasis of the aortic venous system. Then to illustrate a case of disease at the aortic valve - Suppose a patient advanced in years - ~~[illegible]~~ - ~~[illegible]~~ with a Rheumatic or Syphilitic history or perhaps with Nephritic affection or having had Measles - comes to a physician and tells him he has "queer" feelings about his heart, sometimes painful, sometimes he has shortness of breath especially after walking up stairs, sometimes a cough and often feeling faint - these symptoms would be common to any form of heart disease or to Anaemia - that from the history organic disease should be suspected if the lesion be Nitrous at the origin of the aorta - then the patient in addition to these symptoms may also be anxious

If in addition to this, he has a history of one of the above diseases, or one, or both of his parents having died of cardiac disease), and he himself have the "water hammer" pulse, it is always certain that he has aortic valvular insufficiency even without resort to the physical signs; but unless the peculiar pulse is present the above symptoms might be partly explained by the imagination and partly by flatulence. But the physical signs if properly appreciated tell us beyond a peradventure, with or without the above-mentioned symptoms and history, whether there be organic structural change, and if so as to what orifice. By these signs also can be told whether

or not hypertrophy or dilatation exist, and if the auscultator be an experienced and careful one, it is wonderful how accurately the condition of the heart can be diagnosed simply from touch and hearing. If the case be one of stenosis, the physician examine the chest by inspection will generally notice the heart beating more forcibly than usual either in its natural situation, or the apex may be beating to the left of a vertical line through the nipple in extreme case of hypertrophy or dilatation. Percussion is not often used because the reason that the relative dimensions of the thorax are not changed unless there exists pleurisy or pulmonary trouble. Palpation will generally give the pulse heart. different from heart beat either or

or at times perhaps
irregular, and will tell generally pretty accurately as to the hypertrophy or dilation. Percussion will generally show the area of superficial dullness increased, this of course it will not tell clear is the cause of the fact, whether the dullness may proceed from Pericarditis - Pleuritis - Pneumonia - some tumor or what not - it is only certain that there is abnormal dullness whatever be the cause of it. Then the great sheet anchor of diagnosis in this, as in other forms of Cardiac disease, is Auscultation. If an anamnesis taken with a history providing suspicionately to organic disease of the heart be examined by the other physical methods, ~~which are~~ and the suspicion is almost confirmed by finding the heart hypertrophied or dilated,

and on auscultation a murmur is heard most distinctly in the 2° intercostal space a little to the right of the sternum and with a systole of the heart, it may be due to either anæmia or fibrosis of the aortic semilunar valves; but if, in addition to this, there is a whizzing sound heard along the aorta and in the carotids perhaps ~~was those~~ supplanting the second sound in these vessels, or if there be a murmur at the same orifice as the second sound of the heart, whether there be the venous hum indicative of anæmia or not, there is certainly a stricture at this valve, and if there be the second murmur there is also insufficiency, whether anæmia coexist or not. If auscultation yield a murmur heard best in the above-mentioned position at the second sound of the

heart, supplanting it to a greater or less degree, heard along the aorta and in the carotids and accompanied with wheaving impulse of the heart, sometimes sufficient to raise the head ~~[illegible]~~ of the listener from the patient's chest,—or with a very weak impulse indicative of fatty degeneration with dilatation—with or without the "water hammer" pulse, there is no shadow of doubt that Aortic Regurgitation exists; tho' of course if the other methods of examination confirm the result of auscultation it "makes assurance doubly sure". Sometimes pericardial friction sounds occurring at both sounds of the heart, even when the breath is held, simulate true organic murmurs so closely as to be mistaken for them and vice versa, tho' usually

the inexperienced. The differential diagnosis between Pericarditis and Endocarditis with organic valvular lesions is to be made from the fact that the organic murmurs are constant, deeply situated ~~and~~ not affected by pressure and not very amenable to treatment; while Pericardial friction sounds have a different character of sound, are less blowing and more crackling, disappear on pressure, are quite superficial and are quite amenable to treatment; and in addition percussion is apt to elicit more dulness in Peri- than Endocarditis.

When the Diagnosis being established what is the Prognosis in these affections?

This is always unfavorable as to cure so far as we know, tho' much may be done to alleviate the distress caused by the patient,

and life may be prolonged for a longer or shorter period according to the character of the lesions. But in both these affections life is apt to cease suddenly, especially in insufficiency from apoplexy.

As to the treatment of this form of organic cardiac disease - From the variety of its causes one would naturally suppose the remedies would be various, but unfortunately, as the treatment cannot be curative but only palliative, it is not so varied as might be supposed. Therapeutic agents, in cases of long standing, and these unfortunately are those cases most often applying for treatment, must be directed to the symptoms more especially, and as has been stated these are of two kinds either those of plethora, as in insuf-

ficiency or, of anæmia - as in Stenosis.
If in cases Continued fever, Endocarditis with involvement of the Aortic or other valves set in, the weight of authority seems to be to treat the fever as the underlying and the Cardiac affection merely as a complication. Indeed Kiernan says that "if in a case of acute Endocarditis the physician find it an occasion for needless interference, it were better for the patient that the doctor never learned auscultation." It seldom or never happens that the severity of the acute fever is abated that the Cardiac distress is not at all lessened associated. Where the danger is especially from fibrinous clots lodging on the valves, relief never will lessen the superabundant amount of fibrine will obviously lessen

the danger from organic cardiac disease. Hence ~~for~~ the employment of the alkaline carbonates - salicylic acid - the alkaloids of cinchona bark - and the antiphlogistics generally - which in inflammations and fevers generally are supposed to destroy the superabundance of fibrin as well as to reduce temperature and destroy the "materies morbi;" as for instance the use of the carbonates in acute articular Rheumatism, whether it be true or not, that in addition to their effect upon the lactic acid circulating in so large a amount, they have any effect upon the fibrin of the blood. At any rate the efficacy of antipyretics in inflammations generally seems well established and no one would be apt to make a grave error-

in employing them in an acute ~~case~~ inflammation of the Endo- or Myo-cardium with, or without valvular lesions. But in these cases internal remedies should not alone be used; in many cases much relief may be obtained from counter-irritant or local anodyne applications. When the acute symptoms have subsided, is the time when the valvular affection becomes as it were an idiopathic disease, and demands treatment as such; but of course, if the original cause continue-as if Acute Articular Rheumatism has become chronic-or if the original cause has been Syphilis-then original cause must be removed, or if that be thus be impossible, it, as well as the distress

arising from the cardiac involvement must be alleviated as far as possible. Since then acute Carditis so seldom if ever requires treatment, let us only consider those cases where there is chronic well-established organic disease; and bearing in mind the symptoms and course of insufficiency and constriction of the orifice, ~~it is evident that~~ before fatty degeneration with dilatation sets in, it is ~~very~~ evident that two ~~kinds~~ very different kinds of treatment are to be observed, notwithstanding some anticipated gentlemen to the contrary who hold that the treatment is to be the same wherever and whatever the organic valvular lesion. But it appears manifest that to give tonics to a person with Aortic insufficiency

to promote his appetite, perhaps already too great for his condition, to enrich his blood already too rich, to increase arterial tension in one whose arterial rebound is already endangering life, and lastly to increase the impulse of a heart already throbbing with a force akin to bursting whose every stroke sends a volume of into arteries threatening each moment to burst them and crush our existence — to pursue such a course seems obviously too absurd for consideration. Evidently quite a different mode of treatment is required. All violent and sudden exertion and excitement of all kinds is to be studiously avoided as far as possible, and this rule applies to all forms of organic as well as of neurotic disease of the heart.

Then in insufficiency a simple and not too nourishing diet should be insisted on, and all overfeeding prohibited. The digestive organs should be kept in the best working order, and the bowels kept open, in short all hygienic regulations should be insisted on; and if this system be faithfully pursued, it will be a bad case indeed which will require active medication before fatty degeneration sets in, which will by this process be much delayed. But it must be remembered that organic disease of the heart is incurable, and if the substance be seriously affected it must finally cause death however long the individual's life may be prolonged by judicious regimen. If in spite of hygienic precautions a

sudden fatal result is dreaded from excessive hypertrophy some cardiac sedative is needed, but until the heart substance has begun to degenerate, as proved by its enfeebled impulse, digitalis is not to be used, although some very excellent practitioners recommend its use in almost every ~~form~~ of stage of organic cardiac disease ~~disease~~ digitalis should not be used under the above circumstances, because it is now pretty generally believed that although ~~digitalis~~ it is a heart sedative in the sense of diminishing the number of beats per minute, yet it increases the force of each impulse and thus propels as least as much if not more blood to a given point in the same time, whence it is more of a tonic than a sedative, indeed it has been

not inaptly styled the great "heart tonic."
So that in spite of the opinion of some eminent physicians, it seems in our humble opinion irrational to give this remedy which increases the force of the heart's impulse, when it is just the reverse to lessen impulse which is needed, and not the the number of beats per minute. No, the more rational therapeutic treatment would be the employment of the true cardiac sedatives - Hope, - Aconite, Potassium Bromide - Veratrum Viride, and the latter is such an excessively powerful remedy and so nauseating offensive, that it has rather fallen into disuse.
Perhaps in this exceedingly dangerous form of hypertrophy Hope would be the best sedative to use, as it is much milder than the others and does not depress the

system so much. But in this, perhaps even more than in most other diseases, hygienic regulations are the sheet anchor of treatment. Just precisely the reverse of this course of treatment is true with regard to stenosis of the aortic orifice, except in respect to prohibiting too sudden and violent emotion (or rather the causes of it) and overexcitement or exertion of any kind. A rich, generous diet and tonics are to be given, and notably digitalis combined perhaps with ~~bella~~ to moderate the effect of the former and quiet nervous irritability of the heart. But small doses of digitalis should be given, ... certainly at first, and its power of accumulation remembered, so that on the slightest suspicion of ill effect it can be withdrawn

for a time at least, and if proper precautions are taken Digitalis may be taken for years with the greatest benefit. In this form of disease stimulants may be taken as necessary, and a small quantity of wine taken daily will often be of service. If both these affections exist together, that must be treated chiefly which is most prominent, due regard being had for the presence of the other; but it generally happens that, for a time at least, the symptoms of insufficiency are most prominent. But when the stage of decided fatty degeneration with dilatation sets in, then unfortunately "there and aravoeth nigh" and we can only temporize, & if we may be fortunate enough to stave off the end for

a time or least. Then is the time for feeding generously, tho' not too luxuriously, and stimulating, and then of all times is digitalis indicated and its great beneficial influence manifested. Any complications which may arise, as general or local dropsy, must be treated as in any other disease, and if digitalis be not sufficient to relieve them other remedies proper to the condition must be employed either in conjunction with, or if necessary to the exclusion of, digitalis. Diuretics and diaphoretics are to be used rationally, and with regard to their effect upon the heart. Perhaps a remedy which is to play an important part in the treatment of cardiac dropsies, as it has in all other kinds of dropsy where it has been tried, is

ultimately discovered Jaborandi. Bloodletting in any case is only to be resorted to when congestion of some important organ threatens immediate death; for it increases the relative proportion of serum in the blood and thus predisposes to the occurrence or reoccurrence of dropsy. Such then are our present approved methods of treating these incurable affections; and it is much to be deplored that our armament is not more nearly complete and more potent for permanent good. It is deeply to be regretted that our knowledge as to the treatment of structural change in general is not more extensive, since, at present no organic alteration can be restored to its original state. But we should not be

discouraged on this account. Let us remember how far we have advanced on the road to Kymology, and how a few years ago one of our most eminent practitioners could but exclaim - "Oh how difficult it is to diagnose diseases of the heart, and how much more difficult to treat them." In the face of our progress since his day shall we then despair, because we cannot yet cure what a few years ago was hardly known? If Nature has mysteries they can be solved by the earnest faithful seekers, at least many of them can. Who knows but in this our day and generation some one is to discover the great restorer of parts degenerated. The discoverers and inventors of ages past shout but urge us to do our utmost

for our fellow men. We must recollect we have a greater responsibility than our fathers in dark ages past. We the heirs of all the ages' move in the broad light of day, and must see to it that our age does not loiter in the grand triumphal march to Truth in all things, absolute and perfect. But among the benefactors of the Race and the Men of history, past, present and future, few shall be greater, few more revered than he who shall discover a cure for organic structural change. The God shall not scatter of its sting and grave of its victory, and generations yet unborn shall call him "Blessed".

T. Burton Brune.

To the Honorable Faculty
of the
University of Maryland

Thesis on the
"Circulation of the Blood."
by
William J. Morfield.

February 14 1878.

flow into the right auricle from which it flows over the tricuspid valve, which opens into the right ventricle. From the right ventricle the blood is sent through the pulmonary artery into the arterioles in the lungs, where it is oxygenated in the capillaries and being collected into the four pulmonary veins is carried to the left auricle from which it enters the left ventricle through the mitral orifice.

The circulation through the lungs is called the pulmonary circulation, while the general circulation is styled the systemic circulation. Why does the blood circulate?

The first cause of the circulation may be considered to be the force of the contractions of the heart. The heart contracts, or beats, about 70 or 75 times per minute in the adult, so that each contraction of the left ventricle

must prevent a change of blood into the veins. As the semilunar valves close immediately there can be nothing to keep the blood pen- ding out throughout the arterial system; so that the wave of blood is transmitted into the branches of the arterial trunks and as the beat of the heart occurs, what is called a pulse may be felt in an artery. The blood makes a single circuit in from 23 to 30 seconds so that the rapidity of the arterial current is considerable. Besides the vis a tergo or force of the heart, the arterial circulation is maintained in part by the elasticity of the arteries themselves. The chief difference in the structure of the arteries lies in their middle coat, the largest having this coat composed almost entirely of elastic tissue, while the smallest have the middle

coat almost entirely made up of muscular tissue, the arteries of medium size having both elastic and muscular fibres composing the middle coat. As there is great resiliency or rebounding power, therefore, in the large arteries, when the valves at the aortic orifice are closed, the arteries must by their resiliency assist the current of blood in its flow towards the capillaries. The arterial branches go off from their trunks at a much more acute angle than do the venous branches from the venous trunks, and they also as a rule take the most direct course to the part to which they are destined.

What is called arterial tension is caused by the force of the heart at one end of the arterial tree and the resistance of the capillaries at the other end; so that if the

arteries be contracted the arterial tension may be considerable. This is shown by introducing a glass tube into an artery when the blood is seen to rise to the height of about 6 feet equal to about 6 inches of mercury. Therefore when an artery is cut, the blood flows out in jets and unless the artery is secured, blood would be lost so largely as to occasion death. Anatomically the blood consists of corpuscles and liquor sanguinis or plasma. The great majority of the corpuscles are red and of a circular biconcave disc shape, but there are also what are called leucocytes or white corpuscles which are globular in appearance and have in their interior one or more nuclei. The white corpuscle exists in the proportion of one white to 300 or 400 red. This

diameter of the white corpuscle is about 1/2500 of an inch and that of the red about 1/3400.

The office of the leucocytes is now generally thought to be the formation of the red corpuscles, although it was formerly supposed and so stated by both Flint and Dalton that the red and white were distinct anatomical elements and the fact that the red corpuscles are observed in the embryo, before any white ones can be detected, seems a strong argument in favor of this view.

It is generally conceded, at least, that the leucocytes migrate, that is wander from the blood through the coats of the blood vessels and become deposited in various situations. When pus forms these white corpuscles are considered to enter into its formation.

The small number of the white corpuscles

compared to that of the red, seems to me an argument against the theory that they pass such a vast number of red corpuscles. Although perhaps this will seem rather absurd to those who have been accomplished physicians for so many years, I have sometimes thought that perhaps the white corpuscles are red corpuscles which have undergone fatty degeneration and that perhaps in leucocythemia when the white corpuscles are so immensely multiplied, this fatty change might be the real affection of the blood, which may be looked upon as a fluid tissue. The fact that what is called laudable or healthy pus can circulate in the blood without apparent injury to health, sometimes, will perhaps give some credence to this view. But this speculation of mine

has no doubt been disproved.

The hæmatoglobulin of the red corpuscles is their chief constituent. It contains the iron which is said to exist in a minute proportion in the blood. The plasma of the blood contains the albumen and fibrin.

The specific gravity of the blood is from 1052 to 1057 and it gives an alkaline reaction. The alkalinity of the blood is necessary to life. It has a saltish taste, and a peculiar odor, which may be developed by the addition of a few drops of sulphuric acid.

The following composition of the blood has been given by one of the writers upon the subject:- Water 78.4

Red corpuscles (solid residue)	13.
Albumen of plasma	7.
Inorganic salts.	.603
Extractive, fatty and other matters	.777
Fibrin	.22
	100.

Chloride of sodium is an element of the
and gives to the blood its saltish taste
[illegible] to
may be due to the action of the oxygen upon the
[illegible] of the corpuscles. It is probable
that the rapid passage of the blood through
the lungs is sufficient to account
for it without resorting to its action
[illegible]. [illegible] the
the various chemical reactions going on in
the tissues in the tissues and
reactions are considered to give rise to the
animal heat and maintain a constant
temperature under extreme [illegible]
[illegible] in its nature must [illegible] the con
tinuance of life. Hitherto we have assumed
that chemical and vital forces are identical
but this assumption [illegible]

The temperature of the blood in the liver is about 98½° or 99° for some it follows that in the liver it is sometimes at a temperature of 106° or 107°. When the blood in the portal vein has been found to be at 106°, that coming from the liver to the hepatic vein was shown to be at 106.8 showing that the liver at its portal is in the liver itself.

The circulation of the liver is somewhat peculiar inasmuch as the blood which has circulated in the intestines and spleen is collected in a capillary plexus and from it is conveyed to the liver by the portal vein and instead of passing directly to the inferior vena cava is taken up another capillary plexus in the liver and sent out by the hepatic vein. When the hepatic vein enters the vena cava just below the

diaphragm, so that the passage of the blood during inspiration materially aids the circulation in the liver, especially as the hepatic veins are so closely adherent to the liver tissue that they tend to remain widely distended and thus allow the blood to be drawn upwards with ease. Even when cut across after death they remain patulous. These serous vessels in close proximity to the liver, as inspiration is quickened and strengthened, the hepatic circulation is improved correspondingly. The blood in excess of its requirements is directly to the liver, and by the constant upward undulations from the chest. The accumulated blood is sent to the lungs, the natural outlet, or, at least, the equal of the

air in the air cells opening through the capillary walls, the vessels which wind in and out of the cells. The oxygen does not pass to the red blood cells by the action of the walls of the capillaries, but the walls of the capillaries are penetrated directly by the air in the cells. The oxygen is absorbed into the red corpuscles, while on the other hand the carbonic acid of the venous blood, which results from the chemical changes during nutrition is supposed to be only a state of less combination with the linear sanguinity of the blood. It must be remembered however that arterial blood always contains some carbonic acid and that venous blood always contains a certain

[illegible]

[illegible] sufficient amount of oxygen to give it the arterial hue. When the air is vitiated the want of oxygen is not only felt in the lungs but the want of [illegible] oxygen to recuperate the waste and repair and if it does not it death occurs from asphyxia which may be said to begin when the lungs are so [illegible] by [illegible] that they the arteries [illegible] and cannot circulate in the systemic capillaries

So at the [illegible] will be [illegible]

2nd in a [illegible] of the [illegible] and out of the temperature [illegible]

and that are indications of chemic
organization and of the wants of the
that class. The exact process by which
the arterial blood nourishes the tissues is
not altogether understood. When part
of tissue takes up certain elements for its
nourishment and rejects others, different
constituted tissues take other elements, can
only be answered perhaps by the reply that
they are constituted from the first to have
an affinity for different principles and
in various proportions. We do not know
why certain chemical results are obtained
outside of the body, because it is
impossible to divide the constituents
of those vital processes which give rise to
and maintain life. But this is leading
us to metaphysics, which I do not propose to

discuss in this thesis, but will proceed now to consider the heart.

The heart is a hollow muscular organ situated in the body, although during life it is filled with blood.

The cause of the heart's regular pulsations is probably due to the passage of the blood through it, until the blood maintains its normal constituents and tonicity. It has been shown by experiments upon animals that when the heart, removed from the body, is filled with water which is a thinner fluid than blood, the contractions are more full and more sustained than when it contains blood. This proves the thinning of the blood in urine a paramount effect in giving rise to the irregular movements observed in that

condition. The heart is under the control
principally of the pneumogastric and of
the sympathetic nerves. The muscular
fibres of the heart run in various directions.
The superficial fibres starting from the
base of the ventricles curl around the heart
spirally and in an oblique direction from
right to left. Thus the heart moves
slightly from right to left and also
rotates on its own axis, the apex striking
the chest. Some of the deeper muscular
fibres are arranged in a circular man-
ner so that the anatomical construction
the heart is enabled to move in quite
a peculiar way. Indeed, the systole of
the heart has been mistaken for the dias-
tole by competent observers on account
of the curious movements of the organ

There appears to be a difference of opinion
now as to whether the left ventricle alone
constitutes the apex of the heart, together
or shortens during the contraction.
Dallas states that conclusive experiments
have proved that the ventricles gates
during the systole, which adds
other experiments again generally con-
vincing to show that the ventricle really shorten
but that the forward movement of the
heart which occurs is due to the shortening
of the great vessels attached to the heart.
However this may be I believe it is
generally acknowledged that the heart
had selective contraction like any other
muscle. If the heart be partially distended
as in asphyxia it remains paralyzed
like any other muscle to a sufficient

The two ventricles supply the blood to it with blood from the veins. The power of the right ventricle is said to be less than half that of the left and the pressure in the pulmonary artery is estimated to be about one third as great as that in the aorta. The first sound of the heart is produced by the closing of the mitral and tricuspid valves principally. There is also probably a muscular element caused by the contraction of the auricles, and the impulse of the blood may produce some modification of the sound as also the striking of the apex against the chest. The second sound is due to the sudden closure of the semilunar valves closing the pulmonary and aortic orifices. The first sound

is more prolonged than the second and may be said to occupy two parts of a heartbeat while the second sound occupies one part, the remaining one part being represented by a pause, an interval of rest. The two auricles contract together and the two ventricles contract together.

While in health there is no insufficiency of the aortic or mitral valves, there is some slight insufficiency at both the pulmonary and tricuspid orifices and even some little regurgitation into the vena cava. This insufficiency on the right side of the heart is repelled by the lungs, for when the heart is acting very strongly, there would be danger of injuring the delicate capillaries in the lungs, if there were no insufficiency

While the arteries flow away from the heart the veins go toward it. The veins differ in structure from the arteries chiefly in the fact that whereas the arteries contain in their coats a great quantity of elastic and muscular tissue, the coats of the veins are mostly made up of condensed areolar tissue, the tissue which enters principally into the composition of the tendons, so that contrary to what might be supposed at the first glance; the veins are no more capable of resisting a great pressure than are the arteries. It would seem, perhaps, that the veins on account of their containing the arterial blood which flows so much faster than the venous blood, and on account of the natural tunic,

should be made stronger than the veins, but when we consider that the venous blood in many instances is obliged to flow upward and always toward the heart and that the veins being much less deep seated than the arteries are subject often to a great deal of pressure from surrounding objects and also to pressure from the muscles during physical exertion, the fact that they are stronger than the arteries as a rule does not seem surprising. The veins are provided with strong valves, for the purpose of preventing the blood from flowing back upon the capillaries and to prevent congestion.

The chief force causing the venous circulation is the power of the heart and the arterial pressure which keeps the venous

blood from being thrown back through the capillaries. The force of the heart during inspiration also materially aids the venous circulation, and the movements of the voluntary muscles aid it. During physical exertion as the muscles press against the veins and the blood can only pass in one direction, toward the heart, on account of the valves, the circulation in the veins is greatly augmented. The currents of the larger veins also probably exert some power upon small currents emptying into them. The production of varices veins in the lower extremities shows the resistance which the force of gravitation offers to the venous current, all of the veins are not provided with valves. The

cerebral, pulmonary, portal, hepatic and renal veins are unprovided with valves. But as long as the heart and large vessels relieve the veins of their blood, there need be no regurgitation.
Inspiration favors the circulation in the veins, while expiration retards it. The reverse is true as regards the arteries.
The chief cause of congestion in violent respiratory acts is not due to regurgitation, but to accumulation in the pharynx and obstruction to the passage into the great vessels. In extreme congestion reflux of blood may take place to a certain extent into the external jugular, for this vessel has but two valves which are not competent to prevent regurgitation. But it is in the internal

jugular where it is important that no regurgitation should occur, on account of its size and because the importance and delicacy of the parts from which it collects its blood is great. So that at its opening into the innominate vein we find a pair of strong and perfect valves which effectually prevent reflux of blood. In this way during violent expiration the brain is protected from regurgitation and the blood which collects behind the valves passes off by anastomosing branches. The regurgitation into the external jugular synchronous with expiration has sometimes been called a venous pulse. What is styled the true venous pulse is observed sometimes when a gland is secreting actively, as

that the blood passes through the capillaries separately, and at the same time it will not be at rest [illegible]. This is because so much blood is sent to the gland through its artery for the purpose of its obtaining nutriment [illegible]. The blood flowing from a divided vein coming from a gland is not arterial as having no material here.

What is called the deicrotic pulse is a movement of the blood in an artery more frequent than the first beats. It is due to the peculiar distribution of the artery which allows an oscillation of blood and also communicates the impulse of the heart so that the contractions of the heart may appear to be twice as frequent as they really are. On the other hand

sometimes the pulse happened to be only 40 or 45. This seemed especially due to the fact that the heart was acting so feebly that all its contractions were not powerful enough to expel a sufficient quantity — the column of blood in the aorta only a certain number of the beats being accompanied by the pulse.

The capacity of the venous circulatory system is much greater than that of the arterial, probably from 3 to 5 times as great.

The veins in most cases say that obstruction to the current is usually felt only by the anastomosing branches.

The capacity of the capillaries is perhaps five hundred times that of the arteries,

but the individual length of the capillaries is very short, the communication thus established between the arteries and veins is very short. The capillaries have only one coat, which is both the arteries and veins have three coats and. The capillaries are said to be slightly elastic, but they communicate with each other in all directions making a regular network in which the blood flows while nutrition is going on. They are so narrow that the corpuscles can all pass through them in single file and in many situations the corpuscles are compressed and bent in all directions in their passage through the capillaries. This compression of the corpuscles most likely aids nutrition by presenting to the tissues

through the thin capillary walls every part of these surfaces. The capillary circulation is kept up by the force of the arteries from behind and probably also by a "vis a tergo" which is perhaps the force exerted by the attraction of the tissues for the various elements of the food in the blood and for the oxygen. There may also be some mechanical capillary force.

The derivative circulation is shown in the skin, nose, lips and ears. Its peculiarity is that the blood passes directly from the arteries to the veins without passing through the capillaries, so that nutrition in these parts is not prevented by this arrangement and the temporary excess of blood does no injury. The circulation in the penis is somewhat

different from the dicrotic pulse.
In the case of the cardiac pressure and
cardiac congestion a number of factors
blood-vessels large, the right side
which supply the lungs. Under certain
conditions these could become congested
and a stasis of blood occur. But if
this continued for any length of time the
quantity of blood which passes off the
veins must be equal to that which enters
by the arteries. The disease increased
frequency of the pulse does not show an
increase in the rapidity of the circulation.
In physiological increase of the pulse,
the increase in the rapidity of the circu-
lation, is not in proportion to the increas-
ed frequency of the pulse. In increase of
the cardiac action in disease the rapidity

of the circulation is diminished sometimes in a marked degree. The coagulation of the blood is a phenomenon observed when blood is allowed to stand. It consists in the separation of the crusta from the serum which formerly had held it fibrin was called the plasma.

The red corpuscles and the fibrin combine and the serum floats on the clot thus formed. There is no sufficient evidence of the retention of the bicarbonate of carbonic acid, during coagulation of blood which many have supposed to occur. The coagulation is due to the fibrin in which the corpuscles become entangled. The coagulation of fibrin is not a commencement of organization but merely the ultimate form which fibrin assumes

incoagulating. Why does not the fibrin coagulate in the body? When there is an obstruction to the circulation long continued, it is found that the blood does coagulate, but as long as the circulation is kept up freely, the fibrin disappears and is removed too quickly to allow of coagulation. It has been proved that fibrin disappears during the passage of the blood through the lungs and kidneys. The presence of an embolus or of a thrombus shows the result of coagulation in the body. Heart clots are sometimes met with. The property that the blood possesses of coagulating is of great service in allaying hemorrhage, and also sometimes in curing aneurism by causing coagulation of the blood in it.

sac. There are different degrees in the rapidity of coagulation after death from different diseases. In diseases of a typhoid character where the vital powers are much depressed the blood coagulates rapidly and the clot remains soft, but in diseases of an inflammatory nature, such as pleurisy and pneumonia the blood coagulates slowly and the clot remains firm. At the commencement of putrefaction the blood becomes more fluid in every case. There was a opinion that the blood remained fluid from accidental tinctures of poisonous hydrocyanic acid, the supposed to be found in the blood after death, in one instance. It seems to be necessary for chemical medicine,

itself to be absorbed by the blood to have their effect upon the organism. Even the action of the most virulent poisons can be prevented by their action through the circulation, which, although the great rapidity of the effect from hydrocyanic acid perhaps would seem inexplicable to some.

Why the blood of different persons or that of the same individual at certain times is liable to take up certain poisons from the air and at other periods offer effectual resistance to the same poisons may perhaps be explained by considering that the blood like any other tissue has at different times a different tone. It is well known that an impoverished state of the blood invites disease.

The tolerance which the blood of persons has of certain substances, such as alcohol and tobacco, is probably inable to the nervous system. The fact that the blood after having been diseased in a certain way as by small pox or by syphilis, is enabled to resist the influence of the poisons from these diseases, probably shows that there was something in the blood, most likely of a zymotic or ferment nature, which once being destroyed these poisons remains no longer present to again give rise to diseases from the same cause. Or persons who have had diseases twice may have had only a certain portion of this ferment destroyed by the first attack so that they were liable to a second attack. So the virus of vaccination with

being introduced into the blood and acting upon a certain supposed ferment, destroys that element upon which the small-pox poison would be liable to seize. But the zymotic principle seems to be formed again after a variable time and probably influenced by certain conditions and circumstances, so that with most persons, revaccination becomes necessary.

Sulphate of quinia acts in a different way from the vaccination matter, inasmuch as it appears to restore a certain something to the organism which the malarial poison destroys. An element or at least a portion of matter exists in the organism which exhibits the fluorescence which quinia exhibits, and the two principles are believed to be identical, so that when the natural poison has destroyed this property in the tissues, administration of

quinia restores it and wards off the ill effects of the malaria poison. The nature of zymotic diseases is not entirely understood, but the septics are supposed to have some coat of arms.

The circulation in the brain is somewhat different from the circulation in general.

The arteries of the brain are derived from the internal carotid and the vertebral arteries. The vessels have to pass across the arachnoid cavity, get into the subarachnoid space and then divide and subdivide into branches which in their further course to the nervous centres are supported by the pia mater. The branches of the arteries are more deeply placed in the fissures and sulci than the small veins which do not accompany the arteries, but take a different course;

and ramifies upon the surface of the pia mater. The Sylvian artery runs to the anterior and middle lobes of the brain and divides into four branches which supply various parts of the brain. The Sylvian artery is a branch of the internal carotid which comes from the common carotid. The common carotid of the left side is a direct branch from the arch of the aorta and the circulation to the left side of the brain is more direct than the circulation to the right side. The basilar artery and two vertebral arteries supply the cerebellum which seems to be the centre for co-ordination of those voluntary muscular actions occurring from both sides of the median line of the body at once. There are certain terminal arteries which do not join each other but remain distinct until they break up into

capillaries. The arteries are considered by all investigators to be the key to the circulation in the brain. The circle of Willis consists of anastomosing arteries forming more of a parallelogram or quadrilateral than a circle. The inosculation of the arteries tends to a free circulation and also to maintain a better balance of the circulation. The supply of blood to the brain is very much less at certain times and under certain conditions than at other times or under other conditions. It must always be borne in mind that the relaxation of the arteries allows of a greater flow of blood to a part, and that the contraction of the arteries diminishes the supply of blood. The vaso motor nerves control the arteries chiefly, if not entirely. Various brains and varied

modifications of thought are supposed to be brought about by increased and diminished circulation of blood in the brain, the different parts of the brain not having an equal blood supply at any one time, unless it be in sleep. But even then I suppose the circulation is not completely equalized, for during our dreams, be they pleasant or disturbing, the brain must be at work, but its work is then performed in an incoordinated and confused manner so that the experiences which we seem to pass through in our dreams are often extravagant and unique. In the brain the venous sinuses are in the form of sinuses between the folds of the dura mater. There are three but slight dilatations. The brain being enclosed by bone, it might appear to many that there could be

ever with distention of its flexures is
But between the pia mater and the so
called arachnoid of the brain and spinal
cord, there exists a fluid called the cephalo
rachidian fluid. This fluid is capable of
passing from the surface of the brain to the
spinal canal and communicates with the
fluid in the ventricles of the brain. When
the pressure of the blood in the arteries is
increased or when there is an obstruction
to the return of blood by the veins, this
fluid may be forced into the spinal cavity,
the fluid returning when the supply of blood
to the brain is diminished, the communi
cation between the cranial cavity and
spinal canal being free. The small
vessels of the brain, spinal cord and pia
mater are surrounded by a sheath, betwe

which and the inside of the is a transparent liquid which is I suppose the same cerebro-rachidian fluid of which I have just spoken. The flowing out of this fluid allows the vessels to dilate and its re-entrance may occur when the vessels have contracted. This sheath is found in no other part of the circulatory system and is considered by Robin to be the commencement of the lymphatics, the second system. This is supposed to be brought about by diminished brain circulation. Thought and reasoning be induced by the action of the blood in the brain upon nerve tissue, it is as to be now certain modifications of physical health including some alteration in the blood, can influence the active power of the brain and distort the ideas and the judgment,

even giving rise to insanity. Cholesterin of the nerve substance may perhaps vitiate the blood. Cholesterin originates in the brain and nervous tissue as a waste product and if it be not promptly discharged by the liver with the bile, it would occasion blood poisoning. Suppression of the secretion of bile would therefore give rise to a retention of cholesterin in the blood and to poisoning of the nervous centres.

Various emotions acting upon the vaso-motor nerves give rise to an excess or a deficiency of blood in a part by relaxing or contracting the arterioles as evidenced by flushing and pallor of the countenance. Thus mind and body seem to be inseparably connected and we perceive the great wisdom of the ancient motto, "Sana mens in sano corpore."

Having considered now at some length, the circulation in the adult, it would seem to be proper to speak of the circulation in the fœtus, which is quite different from the circulation after birth. As the fœtus is enclosed in a cavity, it cannot of course make use of its lungs in breathing; its blood has therefore to be oxygenated in another way. This is accomplished by means of the placenta, the blood of the mother furnishing to the blood of the fœtus the oxygen which it requires and also those other elements necessary for its nutrition. Of course the fœtus may be killed by poisons given to the mother. The chief peculiarities of the fœtal circulatory system consist in the passage of the fœtus of the two umbilical arteries and the umbilical vein, which three vessels form the

umbilical cord, the two arteries winding around the vein; and the fact that there is a communication by means of the foramen ovale, between the two auricles of the heart, and also in the possession by the fetus of the ductus venosus and of the ductus arteriosus. The umbilical vein also carries the blood which contains the most oxygen while the umbilical arteries return the blood charged with carbonic acid to the placenta where it is oxygenated.

The heart of the fetus receives blood from the two vena cava which empty into the right auricle. The blood brought by the superior cava is the venous blood returned from the head and upper part of the body. The inferior cava conveys not only the blood from the lower part of the body but also that which is sent from the placenta.

through the umbilical vein. This stream reaches the vena cava inferior, partly by the ductus venosus direct and partly by the hepatic veins, after circulating in the liver in connection with the blood of the vena portae. The blood of the superior cava having entered the right auricle passes into the right ventricle it being mixed with a small portion of the blood from the inferior cava. From the right ventricle it goes into the pulmonary art. &c. A small portion of this blood is then distributed by the branches of the pulmonary artery to the lungs and being collected by the pulmonary veins, is carried to the left auricle. The largest portion of this blood however passes through the "ductus arteriosus, a continuation upward of the pulmonary artery into the aorta,

below the place of origin of the arteries of the head and upper limbs and mixed probably with a small portion of the blood flowing from the left ventricle into the aorta, descends partly to supply the lower half of the body and the viscera, but principally to be carried through the umbilical arteries to the placenta for oxygenation. From all these parts it is returned by the vena cava inferior, the vena portæ and the umbilical vein, and reaches the heart by the inferior cava emptying into the right auricle. The larger portion of the blood from the inferior cava is directed, as is supposed, by the Eustachian valve through the foramen ovale from the right to the left auricle, and there with the small quantity of blood returned by the pulmonary veins, passes

into the left ventricle from whence it is sent into the arch of the aorta, to be distributed almost entirely to the head and upper limbs (a certain portion of it probably flows on into the descending aorta and joins the large stream of blood from the ductus arteriosus. From the upper part of the body, the blood is returned by the branches of the superior cava into it and then to the right auricle. These are modifications of this circulation of course earlier in fœtal life. The circulation which I have described existing near the time of birth. The product of conception is called the embryo until the 5th month and the fœtus from the 5th month to birth. After birth the umbilical vessels and the ductus arteriosus and ductus venosus shrivel

up and disappear after a few days and the foramen ovale closes, although sometimes the foramen ovale remains open; when the child becomes affected with cyanosis and presents a blue appearance from deficient oxygenation of blood. Sabatier was of opinion that no mixture of the two streams of blood took place in the right auricle. He thought however that they mingled at the junction of the ductus arteriosus and the aorta. There is reason to believe that the two streams of blood do not mingle in the earlier stages of the fœtus. Indeed the whole course of the blood and the relative position of the veins, as well as other original peculiarities of the fœtal heart, become gradually altered to prepare the way as it were for the new

important changes which take place at birth. The mother may give disease to the fœtus through the circulation and the fœtus may disease the mother also, the latter fact being proved when a fœtus produced from an ovum which has been impregnated by a man having syphilis gives syphilis to the woman, although the woman does not acquire the disease directly from the man. I think the following curious fact can be referred to the action of the blood, viz: It has been observed by raisers of stock that if a mare pregnant by it covers with a quagga, the subsequent offspring, even if got by the best bred stallions will frequently bear some mark of or have some resemblance to a quagga. Now I suppose this can be explained by the fact that

during the embryonic state of the first product the blood of the mare acquires some of the characteristic properties of the blood of the product of the quagga and mare, by means of the placenta, and that then the blood of the mare acts so upon the subsequent ova as to impart to them elements which they retain and when impregnated by the stallion the ova have in their constitution that characteristic element derived by the blood of the mare from the first fœtus or embryo produced by the quagga.

When the blood rises 5 or 6 degrees below 98 or 99 death results. It is also stated that life cannot be maintained when the blood has acquired a heat of 110 degrees.

In proportion degree beyond 105 or 106 adds greatly to the danger. Normally there is a

minute proportion of urea in the blood. When the kidneys do not eliminate urea prompt, uramic poisoning results. The kidneys separate water from the blood in the malpighian tufts where there are collections of capillaries. The uriniferous tubules are lined with an epithelium which is supposed to absorb the albumen from the urine, so that in health albumen does not appear in the urine in excess. But in albuminuria, these tubules become diseased, lose their epithelium and therefore albumen is found in the urine and the kidneys do not properly eliminate the urea.

Blood has been stated to have the same ultimate composition as flesh. I should think that sometimes in disease, pure, warm blood of animals drank might be of service. The quantity of blood in the human bed

has been estimated at as 1 to 8, that is a man weighing 160 lbs would have 20 lbs of blood. In considering the production of carbonic acid I forgot to mention that some carbonic acid is said to be produced by the action of a peculiar acid in the lung tissue, pneumic acid, so that some of the carbonic acid thrown off in the breath is produced by the lungs. In some diseases as in syphilis the increase of red corpuscles in a certain measure of blood shows an improvement. When blood is lost, the venous radicles absorb other fluids in order to keep the blood vessels full. Transfusion of blood has been of late much practiced to a certain extent. The danger of this procedure is that air may enter the veins and prevent the blood from circulating

in the pulmonary capillaries if introduced into an artery does not give rise to any serious disturbance, because the systemic capillaries now it absorbed from them and it does not enter the veins.

The separate contraction of the auricles and ventricles of the heart is not as distinct as many may suppose, but the contraction of the auricle and ventricle occurs, almost as one simultaneous movement.

The heart is devoid of general sensibility and as a rule beats from 6 to 10 times more often in the female than in the male.

The weight of the female heart is estimated at from 8 to 10 ounces and that of the male at from 10 to 12 ounces. The second sound of the heart is heard most clearly at the base of the heart while the first sound

is heard most distinctly at the apex.
The arteries are found empty after death and they remain patulous. It was for this reason that the ancients imagined they contained air and gave them their name of arteries. It seems strange that the course of the circulation was not known before Dr William Harvey demonstrated it about 1610. The mere fact that upon pressure the veins become knotted shows that the course of the blood in them is towards the heart. The circulation of the lymph being foreign to my subject I will merely mention that the thoracic duct empties into the left subclavian vein at the junction of the internal jugular. In speaking of the circulation in the brain I did not mention that there is an immense

number of small blood vessels in the gray substance, but very few in the white. So a small clot may form on the cortex of the brain and be attended probably with no serious results, and upon examination of such a brain small white clots may be found. The rapidity of the flow of blood in the arteries, in the veins and in the capillaries is greater at certain times than at others. At each ventricular systole the blood moves in the carotid arteries at the rate of about 20 inches per second. At the end of the heart's systole and just before the aortic valves close, the movement of the blood decreases very considerably, and may even for a time be completely arrested, according to Chauveau, as stated by Dalton. But Flint states that immediately succeeding the ventricular systole

the blood moves at the rate of 8 1/10 inches per second and that Chauveau calls this the diastolic pulse. Dalton further says that at the instant of closure of the aortic valves the blood flows forward with a velocity, on the average, of 8 1/2 inches per second. Just before a new systole, the blood flows at the rate of about 6 inches per second.

The only marked difference in the statements of the two authors appears to be that Flint does not mention any variation in the rapidity occurring just before the closure of the aortic valves and at the instant of their closure. The above statements refer to the flow of blood in the carotid.

The average rapidity of the venous current of blood has been estimated at about 8 inches per second, whereas that of the arterial

current, averaged throughout the bed, is estimated at about 12 inches per second.

Of course the local variations are numerous.

The rapidity of the capillary circulation has been calculated to be only about 2 inches per minute, but as the capillary communication between the arteries and veins is so short, only this rapidity is sufficient, especially as the blood must be retained in the capillaries for a certain length of time in order that the tissues may appropriate the elements which they require for their nutrition.

It must be remembered that all the secretions and excretions are removed from the blood; gastric juice, perspiration, saliva, milk, urine &c.

That is, this is true to a certain extent only, if the fæces be considered an excretion and which consist partly of matters not

have never been absorbed into the blood.
But the feces should be regarded as an excrement and not as an excretion.
The children of blood relations, such as first cousins, often show a weakness of constitution which the children of those not related do not exhibit. This is because the same kind of blood, often containing the germs or elements of particular physical vices, is strengthened in its tendency toward those vices by admixture, whereas the offspring of those not related by blood, have any original peculiarity of the blood of either parent weakened by the crossing of blood, if I may so express it, different strains of blood tending to correct each other while the same strain propagates certain imperfections. So that the old law of the

Bible, is not only an indisputable moral law but one of unquestionable wisdom physically. Diseases of the coats of arteries and veins frequently occur. An artery may become calcareous or fatty and by rupture, from these states of weakness, cause profuse hemorrhage. Apoplexy is caused sometimes by diseased arteries giving way. Aneurism of arteries, and phlebites of veins are two diseases often affecting the blood vessels. Small blood clots may become detached from the heart and finding their way into an artery in the brain, plug it and interfering with the circulation in the brain occasion death.

This plugging of an artery is more apt to occur in the left side of the brain than in the right because the circulation to the left side is more direct. What is called the buffy coat

the blood, consists of white corpuscles associated with fat floating upon the surface. It is often observed in disease. As the final sentence in speaking of the blood and the circulation, I quote the following remark from Flint:-
"There is reason to believe that most of the affections of the nervous system involve prior "blood changes."
And now, gentlemen, asking that my errors of omission and of commission may be regarded with leniency, as concerns the way in which I have treated the subject of the "Circulation of the Blood" and thanking you for the uniform kindness and courtesy which I have received from all of you, I have the honor to remain your friend and pupil.

William J. C. Herrfeld.

An Essay on

"Pterocarpus pennatifolius."

inscribed to Prof. Samuel C. Chew,

by

his pupil,

the author.

Jaborandi.

One of the most valuable new remedies introduced into the Materia Medica within the last few years is Jaborandi. Its remarkable virtues have been known for ages, but it appears that upon first thought its virtues were rather doubted and the employment of the native members of the fraternity relative to it were allowed to rest, but this seems not to be the case. It having been employed and experimented on clinically and its action on the economy closely watched by Dr. Gottlieb of Dresden, Rabuteau, Jacobson and Prof. Coll. of Turin, and Prof. Bracha of Vienna, and found to be a most valuable medicine.

The Medicine was introduced to notice by Dr. P. Coutinho of Pernambuco in 1873, who claims to have discovered

the properties of the plant. This gave [illegible] Gusler to make a trial of it, and the results of [illegible] that Eminent Physician, which were encouraging led to its employment by the Eminent physicians of this, from whence an account of its value soon radiated, being employed now quite extensively by American practitioners.-

Jaborandi seems to be the leaves of "Pilocarpus pennatifolius" — this not being certain up to the present, and it will be impossible to say with certainty untill the flowers of the plant have been examined, which has as yet not been done.-

The drug as we get it is in Bales, from the Port, where it is imported from parts of Brazil, Rio-Francis principally. The leaves are dry, of a yellowish greenish colour, some of the leaflets on the common leaf-stalk, some broken and some detached from the petiole.- There are a good many

stalks and larger stems interposed, and the whole mixed with a good lot of dust, so that one is reminded of laurel leaves as they appear in commerce.

The leaves are imperfectly about nine inches long with from three to five pairs of opposite leaflets, which are articulated to the rachis, and have very short slightly swollen petiolules; those of the upper leaflets are about one line long, those of the lowest leaflets three lines long and the term is one has the petiolule from half to one inch long. The rachis of the leaf is swollen at the base. The pairs of leaflets are usually about one inch and a quarter inch apart, the lowest pair being about four inches from the base of the rachis.

The leaflets are very variable in size even on the same leaf, — their general outline is oblong-lanceolate. They are entire with an emarginate even retuse apex and on

emergial base. This tissue is coriaceous and when moistened remains as in size such thickness of the leaf of the bay laurel. The veins are prominent on both sides of the leaf and branch from the midrib at an obtuse angle about 60° in a pinnate manner remaining distinct untill within a quarter of an inch of the margin of the leaflet where they become lost in the network of veinlets. The midrib is scarcely prominent on the upper, but forms a distinct fold on the under surface of the leaflets. When held up to the light the leaflets are seen to be pellucidly punctate. These pellucid dots which are receptacles of secretion are irregularly scattered all over the leaf, they are mostly rather large, but vary a little in size. The whole plant is glabrous.-

The inflorescence is a racème, six or eight inches long, the pedicles, so far as can be learned from the scars left on the peduncle are numerous and about three eighths of an inch

apart. – Whether they are horizontal or not when flowering it is impossible to say.

The fruit when perfect consists of five carpels, of which not more than two or three are usually developed to maturity, containing one seed in each carpel which is black and shining, somewhat reniform, convex on both sides, of using a sharp ridge at the back towards the apex.

The height of the plant and a description of stem and parts have not yet been made, the whole plant, or these parts not being found in commerce – and no description of the plant being given by any one who has seen the plant grow in its native soil. It is apparently, judging from parts found in commerce, a shrub.

As there are several plants used in South America under the name of Pokoranda, which seem to possess somewhat similar properties, in varying degrees, I think it will be well

in future to distinguish the Jaborandi, found in our market and here described as Pernambuco Jaborandi. Another species which is used both in France and in this Country, is a kind of Piper. It is readily distinguished from the Pernambuco Jaborandi by the thin texture of the leaves, which are acuminate, and have pellucid dots so minute as not to be visible to the naked eye - when the leaves are held up to the light.

The leaves when chewed, impart at first no sensation to the palate, but after the vegetable tissue becomes impregnated with saliva, the taste is a little bitter, aromatic and insignificantly warm. - The leaves have no decided odour in the dry state.

The drug has been analyzed by Messrs. Bernard and Byasson and has been found to contain: an alkaloid which has been named "pilocarpina", a resin, a volatile

oil, tannic acid, and Chloride of Potassium.

The alkaloid and volatile oil seem to be the active principles, the properties of the drug seeming to depend upon these two constituents.

The alkaloid was obtained, by preparing a tincture, concentrating it by Evaporation, mixing the aqueous filtrate with lime, and exhausting the dessicated mass with Chloroform, which left it as a viscous aromatic mass, soluble in chloroform, ether, absolute alcohol, ammoniacal water and dilute acids. This method is that of Byasson.

The following formulae is to H. Gerrards. - - making an alcoholic tincture, evaporating to consistency of extract, treating this extract with water, evaporating the aqueous solution thus obtained to consistency of soft extract, adding Ammonia in slight excess, and exhausting with Chloroform.

The alkaloid as prepared by the above methods, is a viscous

mass, and will not crystallize but, according to Gerrard, will form crystallizable salts with Hydrochloric, Nitric and Sulphuric acids.

Half a grain of the alkaloid was given, and this produced the full effects of the drug.

—— I have made from the drug, a decoction, an infusion an tincture, solid extract and a fluid extract.

The decoction was made by boiling one ounce of the leaves and stems, bruised, in a pint of water for fifteen minutes.

The infusion was made by pouring one pint of boiling water over one ounce of bruised leaves and stems in a covered vessel and letting digest for two hours. There was also an infusion made by macerating an ounce of the drug bruised in cold water for two hours.

Of these three preparations, the infusion by the hot process seemed to give the best result. Of the preparations whose solid

this infusion has most the taste of the drug, more bitterness, and aromatic taste and aromatic odour remaining. The decoction contains a little more extractive and colouring matter, the bitter taste, but very little aromatic odour or taste. I think when the infusion prepared by the above method is given warm its efficacy will be increased as a diaphoretic in conformity with the clinical fact, that all warm infusions whatever their virtues otherwise have diaphoretic properties.

The infusion by the cold process is of no use whatever and rather not seeming to take up any properties of the drug.

The tincture was made with a menstrum consisting of various proportions of Alcohol and Water viz: one part alcohol to three parts water, dilute alcohol, three parts Alcohol and one part water, and strong alcohol. — The method employed in all cases being to moisten 2 ozs. of finely powdered drug with-

infusion consists in packing in percolator, and treating with sufficient menstruum to make one pint of percolate ——

The preparation yielded by the action of dilute alcohol seemed to external appearance to be the best, having in the highest degree the odour and taste of the drug and having a yellowish green colour. ——

The solid extract was made by the usual method employed in making the alcoholic extracts of the Pharmacopœia — by percolation and evaporation over water bath. I do not think this preparation is very efficacious as the heat employed in the process, certainly drives off the volatile oil, and it is very probable that the alkaloids remaining in the extract is more or less injured by the heat.

The fluid Extract was prepared by taking sixteen ounces of the drug in moderately fine powder and a menstruum of dilute alcohol — (finding this mixture the best in my experiments for making —

the tincture, the powder moistened with dilute alcohol and packed in percolator, but there was some difficulty experienced in the packing and afterwards in the percolation.

The difficulty in the packing being that the material could not be packed tight, when pressed upon it would stick, but the ~~moment~~ pressure was taken off it would spring back owing to the elasticity of the material. The difficulty in the percolation was, that the menstruum not running through equably, there were channels formed in the packed mass, this of course interfering with a perfect result.

I finally, after several ineffectual attempts, resorted to the method proposed by Dr. Francis V. Greene in the American Journal of Pharmacy, Vol. 40, which gave me very good results and which I think is the best method for making the fluid extract. The process is the following:-

The drug is reduced to a moderately fine powder, moistened with menstruum, packed as tightly as possible in conical glass percolator covered with a disk of muslin and on top of this a two or three inch layer of well washed sand, then the menstruum is poured on.

The weight of the sand produces permanent pressure on the material counteracting its elasticity. This prevents the formation of channels, the sand also equably distributing the menstruum over the packed material and so securing its passage through the whole mass. When the liquid begins to drop from percolator, the orifice is closed with a cork, and the percolator, the top having been securely covered, set aside in a moderately warm place for four days, at the expiration of this time, the cork is removed from orifice, more menstruum added by degrees until 14 fluid ounces of percolate have been obtained, this is set aside, and the

fore [illegible] and add the [illegible] to [illegible] solution.

The last fluid is exhausted over water bath with constant stirring down to two fluid ounces, which is added to the reserved fourteen fluid ounces, making in all sixteen fluid ounces.

This preparation, as made by the above process, seems to be very satisfactory. The alkaloid and volatile oil being extracted by the dilute alcohol, and the bulk of these not injured by the heat employed in the process.

Summing up all the galenical preparations: — decoction, infusion, tincture, solid extract and fluid extract, The Infusion and Fluid Extract are only of fractional infusion.

The infusion being readily made, when wanted, providing the drug is at hand, and when well made containing all the properties of the drug, and can be given warm which adds to its

efficacy, the disadvantage being its large bulk.

The fluid extract containing all the properties of the drug can be given in small bulk, it can be kept on hand by the country practitioner and carried about with the bulk of the leaves, from which the infusion would have to be made, will not ferment.

Jaborandi is a powerful Diaphoretic, Sialogogue and Diuretic. The drug is well borne by the stomach and not unwillingly taken by patients. The drug so far has produced no bad results, excepting in a few cases producing diarrhoea.

Prof. Vulpian has made several experiments as to the effect of Jaborandi on the heart, which he communicated to the "Societe de Biologie". His résumé is as follows: If we inject the extract of Jaborandi into the jugular vein of a dog, considerable disturbance in the circulation will ensue

be observed; especially notable is the diminished frequency of the pulse. — The action of the heart sometimes ceases entirely, so that the death of the animal seems accomplished. The lessening in the number of pulse beats caused by the jaborandi is easily averted by an injection of the sulphate of atropine. — By this means the heart again goes back to its regular movements and resumes its normal rhythms. —

On the frog these phenomena are more salient; the heart stops beating at once; but under the influence of certain poisons upon the action of the heart, the organ ceases its function in the systole, while we find the action of the heart of animals killed by jaborandi, without, — in the diastole. — If, before the injection of jaborandi the sulphate of atropine be injected, the effect of the jaborandi, no matter how great the quantity used, will be nil.

Unfortunately, Prof. Vulpian makes no mention of quantities of

having no details in the book as to what amount of the antidote should be used to counteract the effect of an unknown amount of poisonous drug. The experiments, though, however interesting must for this omission lose much of their practical worth.

Doctor Kirtlandale experimented on himself by swallowing an infusion made from 50 grains of the leaves, which produced in fifteen minutes profuse sweating and an excessive flow of saliva; distant vision was obscured, while he could read or see near objects with his customary distinctness; the pupils were but little affected, if at all slightly dilated.

Jaborandi causes pain over pubes, with desire to pass water, the pain subsiding when the bladder is emptied. These facts make it probable that the jaborandi causes contraction of the bladder, for it does not augment the quantity of the

secretions. The drug may then have to be selected in cases of senile atony or atrophy of the bladder — incontinentia urinæ: etc. The result of experimental research in this direction has as yet wanting.

Doctor John H. Pope of North Carolina reports the case of a man: Mr. W. E. P. single, age 40. who came under treatment in November 1877. The symptoms of the case were: considerable emaciation, skin hard and dry, bowels constipated, fæces solid and free from moisture, tongue dry, parched and sticky; thirst inordinate and insatiable; appetite keen, urine transparent and pale, sp. gr. 1040. quantity voided 17 to 20 pints in twenty four hours, leaving white specks of diabetic sugar when dropped on pants. The patient complained of great debility and considerable ennui. The urine on evaporation deposited crystals of diabetic sugar. The treatment consisted in tonics, bicarbonate soda, opiates, narcotics and various cathartics.

The patient was confined exclusively to a meat diet and patient well protected by warm clothing.

This treatment being persevered in for three months and no change in symptoms produced, all these remedies were discontinued and the patient put on fluid Extract of Jaborandi ʒj doses in connection with Iron and Quinine, and allowing him nothing to drink but tar water. The diaphoretic and sialogogue effect of the jaborandi were produced, and in one week from beginning of this treatment the patient was improving; urine diminished one half, of sp. gr. 1030, very little thirst, and less Ennui. During March, the second month, the treatment was continued without any variation, feel more well; skin soft and moist, appetite good and natural, and salivary glands active. In August, the ninth month since the patient had been under treatment and the sixth month that he had been taking jaborandi, the patient was as well as ever,

although the jaborandi was still continued in small doses. ——

Now, was the above a case of diabetes mellitus or insipidus? It looks very much like Diabetes Mellitus, the symptoms, the specific gravity of urine, the saccharine matter it contained and the subjective symptoms — all pointing in that direction, and if this is so, there is a field open for the use of jaborandi in Glycosuria. ——

After the drug has been taken, the pulse increases in frequency from 12 to 24 beats per minute, the face and surface of the body flush — and the blood pressure falls, and profuse perspiration followed by salivation ensues. All these phenomena indicate relaxation of cutaneous blood vessels.

On animals the vaso-motor paralysis extends to the digestive tract, where immense congestion, sometimes leading to Hemorrhage has been observed. The temperature of the body does not rise, but falls, and the contractions of the heart —

are not increased. —

In fractional doses, sweating and salivation are avoided, and replaced by diuresis.

The Infusion may be taken warm or cold, and in about ten minutes after administration, the patient breaks out into a violent perspiration, which continues for four or five hours and which is so thorough as to necessitate several changes of linen. At the same time a most abundant flow of saliva is promoted, so abundant, says Dr. Gubler that speech is rendered almost impossible. He asserts that he has known patients to expect more than a LITRE, (2.113 American pints) in less than two hours

Pilocarpidi, it is believed stimulates the chorda tympani. Gubler attributes to Pilocarpidi some special Elective action on the glomeruli of the kidneys. He considers the therapeutic effect to be analogous to that of the Turkish bath, and hence its use indicated in

Rheumatism and in numerous forms of cardiac and renal disease.

So that summing up the virtues and attributes of jaborandi its use will extend over a large range of individual diseases, it being of value wherever there is a diaphoretic indicated. It seems to do good in Diabetes Mellitus, at least as a palliative, keeping the disease in abeyance. It may do good in enuresis of the bladder and may be said in conclusion to be of use wherever a mild diuretic is wanted.

The dose of the fluid Extract is ℥ss - ℥ss. — of the alcoholic gas. of the tincture ℥ss, — of the infusion - ℥ss - ℥ss, — of the decoction ℥ss - ℥ss.

Baltimore February 1878

W. Christian Sandrock.

Thesis

on

Epilepsy.

by

Oliver G. Getty.

University of Maryland.

Class of 1877-8.

Epilepsy.

Definition: Epilepsy is a neurotic disease characterized with periodical convulsions and complete loss of consciousness during the attacks.

Varieties: The French writers recognize two varieties, Grand mal, and Petit mal. The former corresponds to the common form of Epilepsy or the true epileptic convulsions, the latter corresponds to the eclampsia minor or epileptoid convulsions of some writers. It is characterized by loss of consciousness with little or no convulsive movements. We shall confine our remarks chiefly to the former variety.

Symptoms: In a minority of cases the [illegible]

The [illegible]

headache, epileptic illusions.

Probably the most frequent prodrome is the aura epileptica of Galen; it is usually described as a creeping or blowing sensation or a sensation of a cool vapor emanating from some part of the body and ascending upwards.

In a vast majority of cases, no prodrome is observed whatever.

The patient is suddenly seized, gives utters a loud short piercing shriek or cry, and falls, usually forwards.

Convulsions immediately begin these are at first tonic. The tonic contractions usually persist for several seconds or sometimes longer.

All of the voluntary muscles may be involved; generally the muscles of one side

are involved to a greater extent than those of the opposite side, and sometimes the convulsions are limited to the muscles of one side. The muscles of the hollow organs do not always escape unaffected.

The tonic convulsions usually last for a period varying from several seconds to half a minute or more, they are then succeeded by clonic convulsions.

The head is moved upon the trunk, the limbs and body jerk with violence, the features are widely distorted. The face presents a notably pale at the onset of the attack but is now become deeply congested and livid. The eyebrows knit, the eyes are somewhat fixed and staring, sometimes they roll about in their sockets, and sometimes the pupils are turned up towards the lid.

leaving visible only the white sclerotic.
The pupils do not contract under exposure
to a bright light, but if the eyes are
be irritated the lids will close showing that
reflex action remains intact.
The violent convulsive masticatory movements
are accompanied by the ejection from the
mouth of foaming saliva often more or less
with blood from the tongue which is
bitten or nipped by being caught between
the teeth during the violent contractions
of the muscles of the lower jaw. This happens
more frequently during the clonic convulsions.
Respiration is greatly embarrassed, being
almost suspended during the tonic, and
reduced in number and labored during
the clonic convulsions. The respiratory
act is accompanied by a gurgling noise.

The urine and feces are sometimes expelled during the convulsions, showing, as before stated, that the muscles of the pelvic region are sometimes involved. Involuntary seminal emissions occur sometimes.

The clonic convulsions are of longer duration than the tonic, they generally last for a period varying from two to three minutes seldom longer. The convulsions now gradually diminish in force and frequency the respiration becomes less embarrassed and finally all of the attending phenomena pass away, generally leaving the patient in an exhausted, stupid or somnolent condition, the patient may remain in this state for an hour or two. Occasionally he passes into a state of delirium. In some cases consciousness

is speedily regained after the cessation of the convulsions, and the patient indeed appearances in a state of perfect health. After the recovery of the mental faculties there is a complete oblivion, on the part of the patient to recall anything which may have transpired during the paroxysm. The same train of morbid phenomena recur at irregular intervals. There may be one or many paroxysms daily, or on the other hand there may be intervals of weeks, months, or even years.

The paroxysms usually become increased in frequency and severity as the disease continues. In more favorable cases however the paroxysms are gradually lessened in force and frequency, until finally they cease, and the patient is well, save

as concerns epilepsy. Paroxysms m
at any hour, day or night. They are apt
to occur during the night.
During the course of an acute disease the
paroxysms are generally suspended, recur
-ring again with convalescence.
Dr. Tyler Smith relates a curious case of
an epileptic woman who had a fit
immediately after her last-since considerably
fecundating intercourse and who ex-
perienced an entire suspension of the
disease during the remainder of her
pregnancy. (Meigs's Theoretical and
Practical Midwifery vide p.)
Diagnosis: The disease bearing the most
resemblance to epilepsy is eclampsia.
The first point of difference noted by
Chailly and de Bailly is the absence of

[illegible] may [illegible] the cause of the [illegible]
[illegible] because it is a very unusual occurrence.
The urine after the convulsion, [illegible] generally contains albumen, when ever it occurs in epilepsy it is merely a condition.
From hysterical convulsions, it is to be differentiated in the convulsions being of longer duration than those of epilepsy and by the convulsive movements being purely automatic in epilepsy while in hysteria they proceed from a desire or volition. In hysteria the pupils are not dilated. The mo affections may be assumed. The comatose state which follows an epileptic paroxysm might be mistaken for apoplexy, the previous history will usually suffice to correct the error. It is impossible to be deceived by a malingerer.

if the pupils be carefully examined and exposed to a bright-light.

Prognosis:- The prognosis as regards recovery is very unfavorable, as regards the life of the individual, it is generally favorable. Death may occur during a paroxysm from apnoea or from intra cranial hemorrhage. The prognosis is also very unfavorable as regards the mental faculties.

Causes-- The alleged causes of this disease are numerous, Masturbation, excessive sexual indulgence and intemperance, are recognized as frequent causes, but as these are almost universal evils, we are not surprised to hear them referred to so often, we only wonder why there are not more epileptic subjects. The disease has been attributed to prolonged exposure and

irritation, has been said to give rise to it in several instances. We are disposed to think it is often due to intoxication less than any thing else. But whatever the cause or wherever situated, it must send a morbid influence to the vasa motor centre, affecting it in one of two ways, either causing it to be paralyzed or else irritated, in the former case there follows a forced unnatural dilatation of the minute blood vessels; in the latter the vessels are morbidly contracted, and in either case we have as the result convulsions. These are the only ways in which convulsions can occur. The notable paleness of the face at the onset of the attack seems to indicate a morbid contraction of the vessels so that this condition is immediately succeeded by a dilatation of the vessels is rendered.

sufficiently evident by the deep congestion of the face during the paroxysm, this is true of the majority of cases.

Pathology:- Notwithstanding the numerous cases of epilepsy presented to us for observation, our knowledge, as regards the essential pathological conditions, is very imperfect.- In those cases where the convulsions are due to paralysis of the vaso motor centre we would expect to find the brain in a congested state, while, on the other hand, in those cases where the convulsions are due to an abnormal contraction of the minute blood-vessels we would expect to find the brain anaemic.

Of course these conditions can only exist to a marked degree during the paroxysm.

In those cases where the convulsions are

dependent upon dilatation of the vessels it requires some time for the brain to get rid of this superabundance of blood, and perfect consciousness can not be restored until the brain does assume its normal condition, hence in these cases the patient emerges from the paroxysm in a comatose condition. While in those cases where there is contraction of the vessels, they have only to dilate and the brain immediately receives its normal supply of blood and the patient speedily regains consciousness. Our thoughts are produced only by some, in flash succession, successively upon different points of the cerebral cortex, first one, front and then another, and so on, different brain cells on the same side, with the exception of points on the opposite side, [illegible]

their turn, and following this up, we have produced a train of thoughts, now it is obvious that if the entire cortex be congested at once, or if it have its normal supply of blood suddenly cut off, it is simply impossible for this thought-producing process to go on, hence the unconsciousness during the paroxysm.

Treatment. Numerous remedies are recommended for the treatment of this affection, bromide of potassium, opium, hydrobromic, belladonna, digitalis, and nitrate of silver are to be mentioned as some of the most important. Probably the bromide of potassium has given more satisfactory results than any other one remedy. Nitrate of silver is objectionable on account of its proneness

to produce a permanent discoloration of the skin when used for some length of time. The inhalation of nitrite of amyl proves useful sometimes, especially in warding off an attack. Cold water repeatedly dashed upon the face will occasionally retard an attack.

If possible we should ascertain the true primary cause and remove it; if this can not be done our next step is to control the convulsions.

Bearing in mind the reflex nature of the influence producing the convulsions, we should apply our remedies accordingly. In other words we should treat the case scientifically and not confine ourselves to a specified routine treatment simply because we are dealing with a disease called epilepsy.

a Thesis on Plumbism

by

W. B. Gambrill
of
Maryland

1878

Difficult indeed would be the task of the modern student of medicine, who undertook to write an original dissertation, on a subject such as I have chosen. While the microscope is being used by some of the most profound students in our limitless science, searching for those changes in the minute structures of the human organism, which their reason teaches them must exist, but which, as yet, human ingenuity has failed to devise means to discover, especially in that most wonderful of all

structures, the nervous system: Surely little hope is there for him in the infancy of his pro-fessional career, with his -thus far- limited means of observation, & the short period of his studies; to cope with those great minds, at whose command are all the modern appliances of scientific ingenuity! Therefor, feeling my great weakness, I enter upon my task, not of writing an orig-nal dissertation, but of bringing together such facts as I have been able to gather from the limited sources at my command.

"Plumbism"

Plumbism or Lead intoxication; is essentially a disease of the nervous system; and manifests itself in various morbid phenomena; known respectively as "Lead Colic", "Lead palsy or Wrist drop, and "Lead encephalopathy". Of the last of these very clear accounts are not given, the books doing little more than enumerating the phenomena to be hereafter considered. Of the first and second, numerous instances are more or less familiar to nearly every practitioner of Medicine. Of these, I will

first consider the least danger-
-ous, though exceedingly pain-
-ful affection caused by this
agent, Viz. Lead colic. This is
probably the most common
form of poisoning by lead;
and has been recognized from
a very early period. The prom-
-inent symptom in this affec-
-tion is, as its name implies,
severe abdominal pain. This
usually occurs at or near the
umbilicus; although it may
exist at any part of the abdo-
-men. The character of the pain
is peculiar, and is described
as being twisting or grinding;

it appears to revolve around the umbilicus, and gives rise to great agony. The distress of the patient is extreme, he utters loud cries and tosses himself about with violence. The bowels are almost invariably constipated, and there is generally nausea and vomiting. Notwithstanding the mental and physical excitement, the circulation is often but little disturbed, the pulse retaining its normal force, frequency, and rythm: but sometimes becoming notably slower during the paroxysm. The respiration is often hurried & irregular. The abdomen is apt to be hard

and retracted, especially during the height of a paroxysm. As a rule pressure, when uniform and gradual, made over the seat of pain, gives relief; more rarely the suffering is increased, even by slight pressure. The duration of the paroxysm is variable; it may last for a few minutes or an hour or more. A period of repose follows, which is again succeeded by another paroxysm. This may last for several days or a week. Hammond says the paroxysms are more common during the night than the day; and sometimes the relation

is observed with sidereal regular-
-ity. The attacks may pass off
spontaneously. Bristow in his
book on the practice of medicine
says, one attack predisposes to
another. The pain in this dis-
-ease is neuralgic in character;
and by Prof S.C. Chew, it is said
to be caused by paralysis of the
muscular coat of some portion
of the intestine, the laxity of the
tube caused thereby, permitting
the contents to gather at one
point, which giving rise to
great distention, causes the
pain by pressure. (Bristow
attributes the pain to the bow-

-erful contraction of the portion of intestine above the seat of obstruction; comparing it to the condition of strangulation of the bowel.

Treatment.. It was formerly the custom, and is now with some, to treat this complaint with the magnesium sulphate, under the belief that the sulphuric acid of the salt, entered into combination with the lead in the system, forming the insoluble sulphate. But Prof Chew believes this not to be the case; when it does good, it is simply due to its cath-

-altic power, by which it relieves the distended bowel. Alum, in doses ℥j to ℥ss is said to be very efficacious in the relief of the pain; owing to the tonic effect of its astringency upon the muscular coat of the bowel. Flint, quoting Tanquerel, gives account of 31 cases without treatment; of these, in 15 cases a spontaneous cure took place, at periods ranging from 3 to 13 days; showing a tendency to spontaneous recovery in a certain proportion of cases. Bristow recommends the administration of an opiate, and the application

of fomentations, to relieve pain and distress; leaving the bowels to act of themselves, as they will do, in a few days. But if it is thought necessary to empty the lower bowel it may be done by simple enemata. This treatment, as laid down by Bristow, in my opinion fulfills all indications.

I will now consider the much more serious affection, Lead Palsy or Wrist-drop. This form of lead poisoning makes itself manifest in the paralysis of certain muscles, or groups of muscles; that is,

the extensors of the extremities. The extensors of the upper are much more frequently affected than those of the lower extremity. Some writers have supposed the right arm to be much more often attacked than the left; but according to Hammond, - quoting Tanquerel - this does not appear to be the case. In a large proportion of cases both arms are affected. In some cases the muscles of respiration are involved to such an extent that death soon occurs. Hammond states that he has had two cases in which

there was aphonia, and several in which the voice was materially weakened. When both the upper and lower extremities are attacked, the paralysis may appear in either, or may occur simultaneously in both situations. Either the right or left arm may be alone affected, but, as before stated, both are more frequently affected. They are not always involved to the same degree. The lower extremities are much less frequently attacked than the upper. In a patient in the University Hospital, the paralysis is exceedingly well

marked in the extensors of both the upper and lower extremities. In this patient, the lower limbs were first affected, but were shortly followed by the upper; numerous attacks of colic having preceeded the paralysis. Hammond states that the Triceps & deltoid are sometimes attacked; and he refers to a case in which the biceps was paralyzed. He also states that, contrary to the general impression, the flexors are always involved, but to a much less degree. This latter statement may be true; but it seems more plausible to me,

that this apparent paresis may be due to the generally debility, which usually occurs with the various forms of lead poisoning. Again; the flexors and extensors always and under all conditions being antagonistic: it seems rational that the loss of power in the one set, would of necessity lead to the weakening of the other. Owing to the disuse of the muscles they become very much atrophied; this in some cases is extreme. In the case quoted above, this is very well marked, very little muscle being perceptible over the greater part of the back of the

fore arm. Before the occurrence of paralysis, the patient, probably, will have experienced one or more attacks of colic, although this is not always the case. There are generally tremors, with slight numbness before the appearance of the characteristic "Wrist-drop". The treatment that usually adopted, is the internal administration of Potassium iodide; and the application of electricity. Very much stress was formerly, and is now by some, laid upon the use of Potassium iodide, under the belief that it formed with the lead in the system, a

soluble iodide, which was easily eliminated by the various emunctories. But, to quote Bristow, it is exceedingly doubtful whether this drug exerts any real benefit. The same opinion is held by my honored tutor Prof F F Miles. Strychnia was supposed to exert a beneficial influence upon this condition. Prof Miles says he has derived but little from the use of this agent. Prof Chew says it should be administered hypodermically, and be injected directly into the affected muscle. he says great benefit may be derived

from using it in this manner. Some writers recommend the use of a bath containing the sulphide of potassium. It is doubtful if this produces any real benefit: for while it may assist in removing any lead from the surface, it can have very little if any effect in eliminating lead from the system. It now remains to consider electri--city. It is found that ordinarily the paralyzed muscles will not contract under a strong Faradic current; therefor it becomes necessary to use the Galvanic or so called constant current. When the muscles will reply to the Faradic

current, this will often produce a beneficial effect. But most, if not all neurologist in this country put their main dependence in the use of this the galvanic current. The benefit is often marked; but generally the progress is slow; the treatment extending over months, it maybe years. Often the patient is benefitted by the steady application of galvanism, even when it does not produce muscular contraction. The mode of application as practiced by Prof Miles at this hospital is as follows: From 16 to 20 cells of a good Stöhrer or Dreschar

or as much thereof as the patient can comfortably bear, is used. The anode is held upon the affected muscles, while the kathode is slowly drawn over them; this is continued for 5 or 10 minutes,. But care should be taken not to exhaust the muscles. The same application is made to the spine, the anode to the nape of the neck, kathode slowly drawn down the spine to the sacrum. These applications are usually made three times per week. In Braithwaite's retrospect for Sept 1877, a case of extreem plumbism is reported as cured by the use of the

galvanic bath.. I will now briefly consider the least frequently occurring morbid phenomena known as, "Lead-encepalopathy". In this form of poisoning the symptoms may be slight or severe. In the first case the patient may suffer from slight head ache, vertigo, and various abnormal sensations, as fullness and constriction, with incapacity for much mental effort. Digestion is usually deranged. The mind is irritable and depressed, with a tendency to unpleasant dreams and disturbed sleep. There may also be muscular twitchings.

In the severe form, the symptoms are manifested by delirium, coma, and convulsions; or a combination of any two or all of these. In the delirious form there may be pre-sented the appearance of acute mania; or there may be depression and melancholia. In either case there are generally hallucinations. After a variable period a remis-sion may take place, which may go on to complete disappearance of the symptoms, or may be suc-ceeded by renewed exacerbation. In the convulsive form, the paroxysms may, or may not, be accom-panied by loss of conciousness.

They may be limited to a particular part of the body, or they may present somewhat the characters of tetanus or epilepsy. It is said that some of these attacks are not distinguishable from the idiopathic epileptic seizures. Or these attacks may follow one another with such rapidity as to constitute a "Status epilepticus" In the comatose variety, the stupor is sometimes developed suddenly, but generally there are occasional manifestations of conciousness if he be spoken to in a loud voice, or the skin be pricked or pinched. The pupils are generally dilated and insen-

-sible to light. The lips and cheeks are puffed out in expiration. The patient is pale, emaciated, and the hair is dry harsh and lustreless. The blue line of Burton is generally seen. Prof S. C. Chew, in lectures on lead, states that english observers have found albuminuria to exist in a large number of cases of lead poisoning: and he believes the conditions just enumerated to be due to the same agent that produces similar results in other forms of Bright's disease of the kidneys, that is, urea in excess in the blood, and probably oedema of the neuroglia

of the brain. Whether this be true or not, I must leave others to decide; to me the theory seems good. For the various forms of lead encephalopathy, there is no general treatment laid down; The Bromide & Iodide of Potassium are recommended by Hammond. The patient is to be removed, as far as possible, from all deleterious influences, and treated on general principles. In all these various forms of lead intoxication, the blue line of Burton is usually found, and is due to the lead, taken into the mouth, being acted upon by the sulphur, contained in the tartar

of the teeth, which is derived from the sulpho-cyanide of potassium, which normally exists in the saliva. Of the pathology and morbid anatomy, I shall have but little to say; as various and varying conditions of the nervous system have been found after death. It was held by some that the paralysis was due to the deposit of lead in the muscles; this has been denied, and it is most positively certain that the disease is <u>not</u> one of the muscles primarily, but truly of the nervous system, and the spinal cord is by some high authorities, considered the seat of the disease.

Gombault and Westphal, quoted by Hammond, report cases in which the medullary substance of some of the nerve trunks, was separated into granules, the axis cylinder was normal, and no change could be discovered in the nerve roots or spinal cord.
Hammond says, lead has been discovered, in cases of plumbism, in the substance of the brain and spinal cord, also in the nerves. The muscular fibres in cases of lead paralysis, are reported by Andral, Gendrin, and Tanquerel, as being pale, yellowish, atrophied, dessicated and friable, in fact

they are in a state of fatty degen-
-eration. No anatomical changes
have been found in the intestine
in cases of lead colic.

Causation. There can be no doubt
that these various forms of disease
are caused by the entrance of
lead into the system. The most
active form of this agent, is the
carbonate, the other forms are
only to a certain degree active;
The sulphate is probably the least
noxious, from its insolubility. The
manner of introduction is usually
by the mouth, more often possibly
than at first sight would appear.
In the case of painters, it was

supposed that the lead was absorbed through the skin; but as pointed out by Prof Chew of this University, it is more likely that the lead is taken with the food; as these artizans are apt to take their midday meal, without properly cleansing their hands the lead thus gaining access to the stomach. The same may be said of printers, for in conversation with one of this class, he told me he frequently took food with particles of lead adhering to his fingers. (He is now under treatment for abnormal sensations, as pain, tingling and numbness of the scalp, not however under the belief that the above symptoms are

are caused by lead. He also has some slight abdominal pains in the morning; the blue line of Burton is not apparent. I mention this case, because there seems to be no cause for ailments, and they (may be due to lead introduced in the manner I have stated.) The workers in white lead manufactories are much more liable to the various forms of lead poisoning than other workers in the metal. But painters, printers, plumbers, the glazers of certain kinds of cards, and of pottery, are liable to a more or less degree. It is caused by

drinking water that has passed through lead pipes, especially that which has been contained in the pipes over night. The use of hair dyes and cosmetics containing lead have been known to bring on attacks. Prof Sayre of New York, quoted by Flint, reports a case evidently caused by the use of the cosmetic known as the "Bloom of Youth." Sleeping in a freshly painted room has given rise to well marked cases of "Wrist drop". And lastly I will mention the use of tobacco packed

in lead foil.

In leaving this interesting subject, I am only too concious of its incompleteness, as set down in the foregoing pages; but limited time, and limited means for observation, is all I have to offer in extenuation for my imperfect effort.

A Thesis

on

The Differential Diagnosis of Smallpox, or Variola

Respectfully submitted to the

Provost, Regents and Faculty of Physic

of the

University of Maryland

for the

Degree of Doctor of Medicine.

by

G. W. Larrick

of

Frederick County Virginia.

A. D.

1878.

To

Richard McSherry M.D.

Prof. of Principles and Practice of Medicine

in the

University of Maryland.

As a token of respect and esteem for his high gentlemanly character and as an appreciation of his great diagnostic skill and his conscientiousness as a Practitioner, and for his frankness and unbiased opinions as a teacher, this Essay is most respectfully inscribed, by an unworthy pupil

The Author.

Notwithstanding the fact that Smallpox was, more than three quarters of a century ago, divested, by the immortal Jenner, of the greater part of its terror, it is still one of the most loathsome diseases that scourges mankind.

The fact that almost every practitioner of medicine is, sooner or later, brought in contact with it, together with the extreme contagiousness of the disease, and the excitement which always prevails in a community when a case is pronounced "Smallpox," makes it of the greatest importance that every student of medicine should make himself familiar with the Dif-

ferential Diagnosis of Variola, or Smallpox. In order to do which, he should study carefully the clinical history, first, of Smallpox itself.— Next, of all the other eruptive fevers, in all their different stages; noting carefully the phenomena as they present themselves, and comparing them in such a manner as to gain sufficient knowledge to make a correct diagnosis.

Writers have divided Smallpox into two varieties, viz., discreet and confluent. When the pustules remain distinct on the face the disease is said to be of the discreet form. When the pustules coalesce or run together on the face

it is said to be confluent. In studying the semiology of the disease it will only be necessary to point out their distinctive features without treating of each separately.

If within a period of from one to three weeks after a person is known to have been exposed to the disease, he be attacked by a chill, which is usually marked, or by a succession of chills alternating with flushes of heat, followed by febrile movement, accompanied by perspiration, Smallpox should be at once suspected, and the patient closely watched. If the disease proves to be Smallpox, some, or all, of the following symptoms will present themselves. Nausea and

vomiting are apt to occur, and are frequently prominent and persisting symptoms. The tongue becomes coated, and sometimes the throat becomes sore. Pain is referred to the epigastric region, accompanied by tenderness on pressure. Diarrhoea may exist, but constipation is the rule. Headache, pain in the limbs and general debility are usual as in other fevers. But a more uniform symptom, and one of much more diagnostic importance is pain in the back, especially in the lumbar regions, often becoming intense; this should be remembered as a valuable diagnostic symptom in this stage of the disease. Retention of urine

occasionally occurs. The development of this disease in children is often accompanied with convulsions; they also occur in adults, but not so frequently. Sometimes delirium occurs, which may become violent. By paying strict attention to these symptoms a safe prediction can be made as to whether or not the disease will be violent. If the febrile movement, pain in the loins, etc. etc. be slight it may be presumed that the disease will be mild; and, on the other hand, if they be intense, a corresponding intensity of the disease may be expected. These are the symptoms which usually occur in the first stage of the disease,

which is called the stage of invasion. This stage, as a rule, continues for two days, but numerous exceptions have been noted where this stage was either longer or shorter.

At the beginning of the second stage the eruption appears, and this usually occurs on the third day of the disease. This is decidedly the rule, but it is sometimes anticipated, the eruption occurring on the second day. Or, perhaps more frequently, it is deferred until the fourth, or even the fifth or sixth day. There is great diversity as regards the number of pustules. In some cases only a few are

to be seen; in others they amount to thousands. The most notable as well as the most important symptom of this stage is the diminution, or the entire cessation of the febrile movement as the eruption develops. The thermometer, which now only indicates 100° Fahr., may have indicated before the eruption occurred, 106° Fahr. This taken in connection with other symptoms is almost pathognomonic of the disease. The eruption at first appears in small red specks, or shots, which sometimes become purplish or livid. In this stage the eruption is maculated, but it soon becomes papular, next vesicular, finally pustular.

The eruption, as a rule, is first to be seen on the face, next on the neck and wrists, then on the arms and trunk, and last on the lower extremities. But this is not always the case, especially in children; in them sometimes, and occasionally, but less frequently, in adults, the eruption occurs first on the genital organs and on the nates. If the patient have a blister or sore on his person it may first be seen there that. When the maculae are succeeded by papulae the disease is liable to be mistaken for Rubeola, if the diagnosis has not already been made on sufficient grounds. But even now it can be

differentiated if a minute examination be made. The papulae of Smallpox are smaller, rounder, and harder than those of Measles, and their arrangement is not crescentic as in the latter. They feel to the touch as though small sized shot were under the skin. About twenty-four hours after the eruption first appears the papulae, which first made their appearance become vesiculae. The cuticle having been raised by a drop of liquid continues to enlarge and at the end of twenty-four hours more, or within forty-eight hours after the eruption first made its appearance, and at the end of four

days from the beginning of the attack, the vesiculae have attained considerable size. The vesicles will have attained nearly or quite to their full size by the end of the fifth day, measuring from three to four lines in diameter, and from two to five lines in elevation above the surface of the skin. There are two appearances which the vesicles now present which may be considered pathognomonic of Smallpox, viz. First, their umbilicated appearance, the top of the vesicle being indented, or the cuticle, in its centre, having the appearance of being fastened down by some means to the cutis vera, while at the margin of the top

the vesicle is free, and is raised above the central depression. The next peculiarity to be noticed, if the vesicles are closely examined at this stage of the disease, is, that they present two colors – it may be seen at least in many of them. By examining closely, the appearance is as though a white disc of lymph were set in the centre with a yellowish circle of puriform matter surrounding it. The central part may be evacuated without disturbing the outer part containing the pus, and <u>vice versa</u>; proving that the central portion is a vesicle entirely distinct from that which surrounds it. When these two distinctive features present themselves doubt

can no longer remain as to the diagnosis. But they do not always occur, although they do in the majority of cases. A diffuse redness of the surface resembling that of Measles precedes the appearance of the papules and vesicles of the confluent form, and in order to make the differential diagnosis between the two, the previous history of the case is necessary. In the confluent form, when the vesicles are fully developed, large patches may be seen on the face with the entire cuticle raised like a blister, and the same may be seen on other parts of the body, and in some violent cases the larger part of the surface of the body presents the same appearance.

During the appearance of the eruption on the cutaneous surface, if the mouth and fauces be examined, opaque spots may be seen which are caused by the eruption occurring in these situations. Vesicles are seldom seen because the epithelium gives way, evacuating the serum. These opaque spots are more frequently seen on the tongue and soft palate than elsewhere, and around each one the surface is inflamed, and ulceration may follow. These spots are also liable to occur on the conjunctival membrane, and on other mucous surfaces. By the fifth day of the eruption, or the eighth day of the disease, the vesicles or pustules have become hemispheroidal instead of

presenting the appearance of a truncated cone, as they had done before. This marks the end of this stage, viz. The stage of eruption, or eruptive stage. This stage usually lasts about five days.

The full development of the vesicles being completed they change to pustules, the change first taking place in the vesicles which first appeared, and so on successively. This is the beginning of the third stage. It usually occurs about the eighth day of the disease, and after the umbilicated appearance is gone. While this change is going on, the skin between the pustules becomes red, and the face becomes swollen and tumefied,

the features losing their wonted expression. The eyelids frequently become so much swollen that the eyes are closed and the patient can scarcely be recognized. The hands and feet become swollen in the succession in which they were first attacked. In the beginning of this stage the febrile movement also increases. The pulse becomes more frequent. The thermometer placed in the axilla shows a notable increase of temperature, especially in the evening as compared with the morning. The perspiration, if it has occurred now ceases. All the symptoms denote an epoch of great danger. This is the <u>secondary</u>, or <u>suppurative fever</u>. The secon-

dary fever is only a symptom of the inflammatory process taking place in the skin, and, as the eruption is great or small the fever will be intense or mild. It is natural in the course of the disease for the face, hands and feet to swell, and for inflammation to occur around the pustules, and if these symptoms are wanting the case seldom terminates favorably. It is said that a case almost never recovers from the confluent variety unless swelling of the extremities occurs. A burning pain similar to that of erysipelas is apt to occur during the redness and swelling. Salivation is a more or less constant symptom, and, in cases

of the confluent variety, it is sometimes very profuse and accompanied by swelling of the salivary glands. This symptom seldom occurs in children. It is, however, by some writers considered a symptom of diagnostic importance. Some, indeed, say that by this symptom they are enabled to recognize the disease, when without it, it would be impossible to do so; recognizing by it a variolous fever occurring sometimes during the prevalence of Smallpox without its characteristic eruption which has been called Variola sine Variolis. The lymphatic glands of the groin and axilla are apt to become swollen, and they sometimes suppurate in very low cases.

Haemorrhages from various parts of the body, and vibices, and petechiae sometimes occur. In these cases instead of the pustules being plump and round with a yellowish color, they are flat, red, purple, or blue, and contain a sanious ichor, or blood. When this occurs the disease is called "black" or "bloody" Smallpox. Cases of this description seldom recover, if indeed they ever do. This is the worst form which it can assume, and it is fortunate that it seldom occurs.

Ataxic symptoms denoting great gravity are apt to occur. Delirium, active and maniacal, sometimes occurs, but it is more frequently passive, similar to that occurring in typhoid fever.

Subsultus, carphologia, and coma-vigil may also occur. Sometimes the patient falls into a comatose state. This stage usually lasts from four to five days and is called the stage of suppuration. About the twelfth day of the disease the pustules begin to break, and this marks the beginning of the fourth and last stage of the disease. The pustules break and the pus concretes into a hard and dry scab. Those pustules which first made their appearance, first forming scabs. During this period the body exhales a peculiar, offensive, and greasy odor; and it is said that once having smelled this disagreeable odor, it is never forgotten; and one might easily make

the diagnosis in this manner without having seen the patient. Many patients are disturbed about this time by itching of the surface and can scarcely be restrained from scratching. This is the most repulsive period of the disease. The spectacle which the patient presents with his face red and tumefied, and covered with large scabs, or, it may be, that the face is covered by one large scab as if it were a mask, together with the offensive, sickening odor, renders this the most obnoxious, offensive, and loathsome of all diseases. After the pustules begin to desiccate the tumefaction of the surface and its redness begin to disappear, and continue to do so until it has

entirely disappeared. This stage usually lasts from six to ten days, the scabs drying up and falling off continually, leaving the skin either unbroken and colored which may continue for a long time; and even after it is thought to have disappeared altogether it sometimes becomes conspicuous on exposure to cold. Or the skin may be broken and become cicatrized, thereby horribly disfiguring the face, which ever after remains. The skin is then said to be "pitted" or "pock marked". Without severe complications the patient becomes convalescent at the end of this stage which is the <u>stage</u> of <u>desiccation</u>, and which usually ends in from seventeen

to twenty-four days from the beginning of the disease.

Having glanced at the clinical history of Variola it now remains to compare the symptoms of this disease in its different stages with the symptoms which present themselves in the other exanthemata, and with those similar which occur in other diseases, and discriminate between them and show how, if it be possible, a correct diagnosis may be made. In doing this it will be necessary to refer to the clinical history of those diseases which present symptoms resembling those occurring in Smallpox, and it will be assumed that those diseases have been studied.

Prior to the eruption of Smallpox a positive diagnosis can not always be made, but by strict observation, and correct information of the invasion, few mistakes need be made.

The affections with which it is most often confounded are Scarlatina and Rubeola and the diagnosis can only be made by exclusion.

Rubeola is to be excluded by the symptoms which attend its invasion viz: Its invasion is first marked by coryza, causing an abundant flow of a somewhat acrid serous fluid from the nostrils; the patient being compelled to use his handkerchief constantly, or he keeps up a continual

snuffling in order to prevent the escape of the liquid from the nostrils. The eyes become red, irritable and watery and peculiarly sensitive to light. More or less bronchitis is apt to supervene, occasioning considerable cough at times, which may prove distressing to the patient.

These symptoms are seldom if ever seen in Smallpox. But they are not always marked in Measles. They may be slight or altogether wanting. Rubeola, unlike Smallpox is seldom ushered in by a chill. There is more or less febrile movement with irregular chilly sensations, and perhaps shivering, but rarely a pronounced chill. As the eruption begins to appear the tempera-

ture rises, and the thermometer in the axilla may indicate as high as 109°. This is a diagnostic symptom of immense value. The contrast in this one particular is extremely marked, for in Smallpox the temperature always falls, and may reach the normal standard of health when the eruption shows itself. The eruption however does not occur so soon as it does in Smallpox. In Measles it usually does not appear until the fourth day; whereas, in Smallpox, as a rule, it appears on the third day. Frequently the eruption of Measles does not occur until the fifth or sixth day, but it may occur before the fourth day; but this is infrequent. This is another point of some

importance, viz., the longer delay in the appearance of the eruption in Measles than in Smallpox, and it should have due weight in making the diagnosis. Another symptom is, that after the second day of the eruption in Measles the temperature rapidly diminishes, whereas about this time, or a little afterwards, in Smallpox the temperature gradually begins to rise. The papules of Rubeola somewhat resemble those of Variola, but they are larger and less firm, and do not have that hard, round, and shot-like feel, when they are touched with the finger, that is observed in those of Smallpox. Occasionally a few vesicles may present themselves among the papules, but

this does not often occur, and they never present that umbilicated appearance of those observed in Smallpox, and which is almost pathognomonic of that disease. There is one other thing which is peculiar to the eruption of Rubeola, and which is not to be seen in Variola, viz., that the papules are apt to arrange themselves in a semi-circular or crescentic form. This is of some importance and should be looked for. By strict attention to the above points Rubeola may be easily excluded.

Scarlatina is, perhaps, the next disease most frequently mistaken for Smallpox. Like Smallpox

it is sometimes ushered in by a chill more or less pronounced, but the chill is seldom so marked, and is less frequent than in Smallpox. As a rule the febrile movement is much greater at this stage of the disease than it is in Smallpox, and this should be remembered. A more or less vivid redness of the fauces may be noticed, and some pain may be felt in swallowing, and is caused by the early appearance in this situation of the efflorescence. The stage of invasion is usually shorter in Scarlatina than in Variola. It most frequently makes its appearance at least twenty-four hours earlier than

the eruption of Smallpox. It is usual for it to occur on the second day, but it may occur within a few hours after the disease has set in, or it may be deferred. When the eruption makes its appearance the diagnosis is easy, but when it is deferred the two diseases so nearly resemble each other that it is difficult to make the diagnosis, and all that can be done is to await other symptoms, or the appearance of the eruption. In Scarlatina the eruption, unlike that of Smallpox, usually makes its appearance first on the body and afterwards on the extremities, and face and neck. It usually extends itself over the whole surface within twenty-four

hours, this being in contrast with Small pox, in which it usually requires from two to three days to extend itself over the entire surface. Its first appearance is in minute crimson dots, afterwards they coalesce forming different sized patches of irregular outline, and of a scarlet red color, which are distributed more or less near each other over the entire surface. A marked contrast between Scarlatina and Variola is noticeable by passing the hand over the surface, which in Scarlatina is found to be smooth, or nearly so, a few small papules sometimes being felt, whereas in Small pox, the papules are well developed. By drawing

the finger nail over the red surface in Scarlatina a white line may be noticed which remains for a moment. In the early part of the disease the tongue is usually coated, and red specks may be seen, as though the tongue were sprinkled with Cayenne pepper. The exfoliation of this coating leaves the tongue reddened and the papillae much enlarged, and it much resembles a ripe strawberry. This is pathognomonic of Scarlatina and if it be observed the diagnosis need no longer be delayed. Like Rubeola, and unlike Variola, the temperature rises on the appearance of the eruption, and should not this occur it excludes Scarlatina. The heat of the

skin and frequency of the pulse are much more marked than in Variola the pulse sometimes beats 130 or 140 per minute.

Varicella is usually too mild to be mistaken for unmodified Smallpox, but it may be confounded with Varioloid, which is simply modified Smallpox. The stage of invasion in Varioloid is as long or longer than in Variola. But in Varicella the slight constitutional symptoms which present themselves, prior to the eruption, usually last but about twenty four hours. The eruption is more abundant, usually on the body, neck, and scalp; most

frequently appearing first on the body and then on the scalp; the vesicles, generally, being small. The eruption is vesicular from the first which is in marked contrast to the eruption of Varioloid, which is first maculated then papular before becoming vesicular. The number of vesicles in Varioloid rarely exceed 100, while those of Varicella are much more numerous and much smaller. Varicella may be excluded at once if the umbilicated vesicles make their appearance.

The symptoms which present themselves in the commencement of Rosiola are somewhat similar to those of Variola, consisting of nausea, vom-

iting, cephalalgia and loss of appetite, but these symptoms are slight compared with those of Variola. Occasionally there is slight febrile movement, diarrhoea, and chilly sensations. The eruption is maculated and in patches of a rose color, the color disappearing on pressure. It appears earlier than the eruption of Smallpox and lasts only one or two days. The differential diagnosis is easily made by the mildness of the symptoms in Roseola, and the want of pain in the loins and limbs and the absence of papules in this disease.

Typhoid fever occasionally presents symptoms similar to those

of Smallpox, but it is easily diagnosed. The eruption of Typhoid fever is much more slightly developed, and the papules are smaller and of an oval form, and do not generally appear until the seventh day. They do not occur on the face, but on the trunk. Typhus fever occurs so rarely in this country that it need scarcely be mentioned. Its eruption generally appears earlier than that of Variola, but is always maculated, never becoming papular.

Smallpox is scarcely ever mistaken for any other disease than those above named, and by strict attention to the symptoms of these diseases when compared to those of Variola

little difficulty need be had in making a correct diagnosis at a comparatively early stage of the disease, thereby enabling the practitioner to take early and decided steps against the spreading of this truly loathsome and formidable disease.